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ANTIBACTERIAL MANAGEMENT OF URINARY TRACT INFECTIONS

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In a study not yet completed, our data at present indicate that at least 20% of all patients coming to autopsy at Wesley Memorial Hospital had gross or microscopic evidence of active or healed pyelonephritis. The condition was diagnosed ante mortem in only 6% of the cases. These figures are in agreement with those of other workers.[1] Such findings, together with our frequent inability permanently to control urinary tract infections, led to the present study, which is a critical evaluation of the problems in our own cases of the past 18 months.

Current medical literature abounds with enthusiastic reports of the efficacy of the antibiotics, sulfonamides, and sulfonamide mixtures in urinary tract infections. Immediate results with these new agents have prompted us to share this enthusiasm, but a careful review of our long-term observation has shown that favorable effects often are only temporary.

All patients on our own services who had cultures of catheterized urine because of known or suspected urinary tract infection were studied. The majority of these patients whose infection did not clear up quickly—as demonstrated by routine examination and culture of catheterized urine and the other usual clinical criteria—were studied by roentgenograms and cystoscopy. The infections are classified roughly into various groups as accurately as our data would permit (Table 1). Probably in a high percentage of those listed as primarily infections of the lower urinary tract there was considerable involvement of the kidneys and ureters also.

It is well recognized by urologists that regardless of the care with which an antibacterial agent is chosen, and the persistence with which it is used, urinary tract infections will not clear up unless obstructive lesions are corrected and infecting foci such as urethritis, vaginal infections, prostatitis, and infections of the gastrointestinal tract are eliminated. It will be seen that the large majority of these patients—at least 75%—had urinary tract obstructions or infectious foci of one type or another.

Table 2 reveals that a total of 332 various micro-organisms were cultured from the 325 patients studied. In 24 instances the patients had pyuria and other symptoms of the type usually associated with urinary tract infections, but cultures were sterile before treatment was instituted. In 63 instances two or more different bacteria were present in the original culture before therapy was begun. Often when one was eliminated by treatment the other remained. In 74 instances the single micro-organism present on pretreatment cultures was eliminated by treatment, but a different organism appeared on cultures taken after the first course of therapy. In 26 instances Escherichia coli was eliminated by appropriate therapy, but Streptococcus faecalis was present in pure culture after treatment. In 16 instances the order was reversed.

CHOICE AND DOSAGE OF ANTIBACTERIAL THERAPY IN PRESENT STUDY

Since the object of the present study was to get some comparison of results with the different antimicrobial agents commonly used for urinary tract infections, no selection of particular remedies was made other than that the agent used should have been expected from current information to be effective against the bacterium in question and that its use should be practicable. The latter consideration is important. Some of the antibiotics may not be practicable because they cannot safely be given parenterally. Since in their present form bacitracin, aerosporin,* polymyxin, and neomycin often produce parenchymal kidney damage, they were excluded from the

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1. Weiss, S., and Parker, F., Jr.: Pyelonephritis: Its Relation to Vascular Lesions and to Arterial Hypertension, Medicine **18**: 221 (Sept.) 1939. Mansfield, J. S.; Mallory, G. K., and Ellis, L. B.: The Differential Diagnosis of Bright's Disease: Clinicopathological Correlation, New England J. Med. **229**: 387 (Sept. 2) 1943.

present study. Another important consideration is the cost of the orally administered antibiotics. This completely precludes their use in adequate dosage by many patients and prompts the physician to prescribe them always in minimum dosage. Penicillin was used only in hospitalized patients and usually in those undergoing surgery. It was never given orally. Likewise, streptomycin was given only to hospitalized patients, in some instances not because it was considered the agent of choice but because of the inability of the patient to take anything by mouth. The adult dosage range considered by us to be acceptable for forming opinions as to the efficacy of treatment is listed in Table 3. All of the patients listed in this study were treated within the dosage ranges indicated. With very few exceptions the daily dose of all oral preparations was divided into four equal parts given at six-hour intervals day and night. Penicillin and streptomycin were usually given at 12-hour intervals. Many patients were given smaller doses, with good symptomatic relief, but the results are not included in the tables. In a few instances the drugs—especially penicillin and streptomycin—were given over periods of three to four weeks.

TABLE 1.—*Location and Classification of Urinary Tract Infections*

Upper Urinary Tract Infections	Cases	Lower Urinary Tract Infections	Cases
Pyelitis with renal or ureteral calculus	32	Cystitis, anatomic etiology not determined	58
Pyelitis with hydronephrosis—obstruction at ureteropelvic junction	21	Cystitis associated with benign hypertrophy of prostate	42
Pyelitis with hydronephrosis due to nephroptosis	15	Cystitis associated with cystourethrocele	19
Pyelitis with tumor in kidney or bladder obstructing ureter	9	Cystitis associated with urethral stricture or urethritis	35
Pyelitis with double kidney and ureter	5	Cystitis with cord lesions and indwelling catheter	17
Pyelitis with ureteral stricture	5	Cystitis with carcinoma of bladder or prostate, or papilloma of bladder	17
Pyelitis of pregnancy	1	Cystitis associated with acute prostatitis	4
Pyelitis with no roentgenographic evidence of obstruction	25	Hemorrhagic cystitis, etiology not determined	4
Tuberculous pyelitis with secondary invaders	9	Interstitial cystitis and elusive ulcer	7
Totals	122		203

Results of therapy in the same patients appear in two or sometimes three of the groups listed according to causative organism, because, as the culture results shifted after therapy, a new therapeutic attack was begun on the new organisms encountered. Sometimes they appear more than once in the same group, because when one therapeutic agent failed a second was used, and each trial is recorded separately.

It will be noted that 3,4-dimethyl-5-sulfanilamidoisoxazole (gantrisin*) was used more often than other sulfonamides, because previous studies [2] had shown it to have about the same range of bacteriostatic activity as sulfadiazine, and studies since indicated that its in vitro bacteriostatic effects were roughly comparable again to those of sulfadiazine and two of the commonly used sulfa mixtures.[3] More important, its solubility in pH ranges of 4.5 to 6 is considerably greater than that of sulfadiazine [4] and slightly greater than the solubility of the sulfa mixtures which we tested [5] (Table 4). Thus, it appears to be the sulfonamide of choice in most urinary tract infections.

TABLE 2.—*Distribution of Micro-organisms in Urinary Tract Infections in 325 Patients**

	Esch. Coli	Str. Faecalis	Ps. Aeruginosa	Staph. Albus and Aureus	B. Proteus	A. Aerogenes	M. Tuberculosis	K. Pneumoniae	M. Tetragenus	Str. Hemolyticus	B. Subtilis	Total
Upper urinary tract	49	19	25	11	4	3	5	2	1	1	1	121
Lower urinary tract	102	50	21	11	10	8	0	3	4	1	1	211
	151	69	46	22	14	11	5	5	5	2	2	332

* Evidence of infection, no micro-organisms on original culture: 24
Multiple micro-organisms in original cultures: 63
Change in bacterial flora of urine of patients under treatment: 74

Methenamine mandelate (mandelamine*) and calcium mandelate were used chiefly in the early phases of this study. For most urinary tract infections they are less effective than sulfonamides and antibiotics. For milder colon Bacillus and Str. faecalis infections, in which reactions or expense make the other drugs impracticable, they have a field of usefulness.

Simultaneous administration of two or more agents was carried out almost exclusively in hospitalized patients. The scatter in the various combinations used in this study is too great to permit conclusions regarding any of them. Considering the large number of multiple infections and the very frequent elimination of one micro-organism with the emergence of another under therapy, intensive study of the possibilities in this mode of attack seem clearly needed.

TABLE 3.—*Dosage of Various Antibacterial Agents Used*

	Range (Daily)	Average	Duration of Therapy (Minimal), Days	Average, Days
Gantrisin*	4-9 gm.	6 gm.	5	10
Sulfadiazine	4-6 gm.	.....	5	10
Combined sulfonamides	4-6 gm.	4 gm.	5	10
Mandelamine*	6-8 gm.	.....	8	10
Calcium mandelate	6-8 gm.	.....	8	10
Penicillin	400,000 to 1,200,000 U.	600,000 U.	5	10
Streptomycin	1-2 gm.	1.5 gm.	5	10
Chloramphenicol	1.5-3 gm.	2 gm.	5	7
Aureomycin	1.5-3 gm.	2 gm.	5	7
Terramycin	1.5-3 gm.	2 gm.	5	7

RESULTS

There was no case of acute pyelitis in which there was not quick improvement—subjectively and objectively—by the use of antibacterial agents, but in no instance was the infection regarded as controlled unless one or more cultures taken 48 hours to three weeks after completion of therapy gave no growth, and there was no reappearance of clinical symptoms. Often these observations extended over many months.

2. Schweinburg, B., and Rutenburg, A. M.: NU 445 in Treatment of Infections Due to Gram Negative Bacilli, Proc. Soc. Exper. Biol. & Med. **71**: 20 (May) 1949. Rhoads, P. S.; Svec, F. A., and Rohr, J. H.: Clinical Evaluation of a New Sulfonamide—Gantrisin, Quart. Bull. Northwestern Univ. M. School **23**: 104, 1949.

3. These results will be summarized in another communication.

4. Svec, F. A.; Rhoads, P. S., and Rohr, J. H.: A New Sulfonamide (Gantrisin): Studies on Solubility, Absorption and Excretion, Arch. Int. Med. **85**: 83 (Jan.) 1950.

5. The Bratton Marshall method of sulfonamide determination was employed, using the same batch of normal urine (adjusted to the various pH levels) as the solvent in each determination.

The same criteria were used for the more chronic infections. In Table 5 our estimates of the clinical results obtained in the series with recultures after treatment is given. As might be expected, the therapeutic results were much better in the "lower urinary tract infections" than in those in which pyelonephritis was demonstrated. It will be noted that a high percentage (47.5%) of patients having cystitis with no important obstruction to the outflow of urine made a permanent recovery. Conversely only 9 (7.6%) of 119 patients with evidence of urinary tract obstruction appear to have been completely cured of infection. In these nine patients cultures became sterile only after removal of the obstructing lesions.

Rational approach to therapy must begin with recognition of the causative micro-organism and, if possible, of the pathological condition favoring its growth in the urinary tract. It is for this reason that results of therapy are listed according to the responsible bacteria. The series is far too small to permit final conclusions regarding the efficacy of one drug as compared to the others.

It is seen that Escherichia coli was the most frequent micro-organism encountered in infections of both the upper and lower portions of the urinary tract (Table 2).

TABLE 4.—*Solubility of Sulfonamides and Sulfonamide Combinations in Normal Urine at Various pH Levels*

	Mg. per 100 Cc.		
	pH 4.5	pH 6	pH 7.5
Sulfadiazine	11.5	47.6	100
Sulfamerazine	25	56	120
Sulfamethazine	32	80	120
Sulfathiazole	61	96	150
Gantrisin®	73	260	530
Equal parts of: Sulfadiazine, Sulfamerazine, Sulfamethazine	54	101.6	176
Equal parts of: Sulfadiazine, Sulfathiazole, Sulfamerazine	52	108	205

Its vulnerability to most of the agents used was greater than was that of the other organisms studied both by in vitro and in vivo tests. However, its frequent association with other micro-organisms is striking—especially in infections due to obstructive lesions (Table 6). Theoretically, agents effective against both gram-negative and gram-positive organisms would seem indicated in such Esch. coli infections. The good results obtained with aureomycin and the combination of gantrisin® (Tables 6, 7) and penicillin appear to support this idea. Gantrisin® alone is effective clinically against many Esch. coli strains, but obviously not against most strains of Str. faecalis (Tables 6, 7, 8). The tendency of two or more agents used together to be more effective than therapy with a single one is illustrated in the Esch. coli series (Tables 6, 7). For the most part, patients receiving combined therapy were hospitalized because of pyelonephritis due to obstructive lesions and had severe infections not likely to respond permanently to any type of therapy other than surgery, yet the emergence of other organisms during treatment and the proportion of positive recultures for Esch. coli was much less frequent in patients treated with two or more agents simultaneously than in the less severely infected group receiving a single drug. The remarkably low incidence of permanent "cures" with any type of drug therapy except in the patients having cystitis without obvious obstruction is striking.

Str. faecalis infections (Table 8) are for the most part confined to the lower portions of the urinary tract. In our experience they were found in the absence of excessive numbers of leukocytes in the urine much more commonly than was the case in infections with other micro-organisms. The great difficulty in eliminating them from cultures may be that they so frequently reside in the urethra and thus are not in contact with the drug-laden urine for long periods during treatment. Also they are relatively insusceptible to sulfonamides. When mild disorders of micturition persist after Esch. coli have been eliminated, they are the micro-organisms most frequently encountered in catheterized urine. It is seen that even in the absence of obstructive lesions Str. faecalis infections did not respond well to most of the agents used. Local treatment to the urethra and bladder usually is needed to eliminate them completely.

TABLE 5.—*Analysis of Results in Urinary Tract Infections*

	Results of Recultures After a Single Course of Therapy				
	Negative	Positive	Change in Micro-organism	Total Cases	Infection Controlled
Infection of upper urinary tract	9	21	21	51	3
Cystitis with obstructing lesions of bladder or urethra, or tumor of bladder	17	32	19	68	6
Cystitis or urethritis with no evidence of obstruction	21	13	6	40	19
Total	47 (29.6%)	66 (41.5%)	46 (28.9%)	159	28 (17.6%)

TABLE 6.—*Results of Therapy in Esch. Coli Infections (One Agent Used Alone)*

	Results of Recultures After a Single Course of Therapy				
	Negative	Positive for Esch. Coli	Organisms Changed Under Treatment		Infection Controlled
Aureomycin	5	3	3 Str. Faecalis		..
Chloramphenicol	3	4	1 Str. Faecalis and 1 A. aerogenes		2
Streptomycin	3	2	1 Str. Faecalis and 1 Ps. aeroginosa		1
Terramycin	1	2	.....		1
Penicillin	..	2	.....		..
Gantrisin®	6	6	10 Str. Faecalis and 1 B. Proteus		2
Combined sulfonamides	..	3	1 Ps. aeroginosa		..
Calcium mandelate	1	..	3 Str. Faecalis and 1 A. aerogenes		..
Mandelamine®	2	6	.....		..
No. of cases	72	21	28	23	9
Results of combined therapy—No. of cases	27	11	10	6	5
Totals	99	32	38	29	14

As in the experience of most authors, our efforts to eliminate Ps. aeruginosa from the urinary tract were largely unsuccessful (Table 9). This organism is found almost exclusively in obstructive lesions, particularly those involving primarily the kidney and ureters, and very commonly in association with calculi and tumors of the urinary tract. In vitro tests show it to be quite insensi-

tive to all the commonly used antibiotics.[6] Reports indicate that polymyxin, aerosporin,® and neomycin are relatively effective against Pseudomonas aeruginosa in vitro,[7] but we did not use these antibiotics because of their toxic effects. In our tests some strains were sensitive to the sulfas, especially gantrisin.® The only patients in whom the urine was cleared of Pseudomonas were three with cystitis and one who also had tuberculosis of the kidney. The only "cures" were in the two cases of cystitis associated with acute prostatitis without obstruction.

Our experience with the other organisms is too limited to permit much discussion. The two "cures" in the Proteus infections were after fairly vigorous treatment and in patients in whom the obstructive lesion was removed. In one young woman who was unable to empty her bladder completely during the acute phase of poliomyelitis the infection cleared after ability to empty the bladder was restored. She took 3 gm. of chloramphenicol and 1 gm. of streptomycin daily for a 10-day period. The other patient had a transurethral resection for prostatic hypertrophy. After he had taken gantrisin® in 1.5 gm. doses every six hours for 16 days, the culture became negative and remained so. In the four patients with Aerobacter aerogenes infections treated with combined sulfonamides, gantrisin,® calcium mandelate, and aureomycin, respectively, the bacterial flora changed under treatment in all, but the infection was not terminated. One attack of pyelitis caused by Staphylococcus albus cleared up under treatment with combined sulfonamides. An attack of ulcerative cystitis due to Staph. albus recurred after treatment with chloramphenicol plus combined sulfonamide and chloramphenicol alone. The original culture from a patient with bilateral pyelonephritis revealed Klebsiella pneumoniae, and after penicillin therapy the reculture showed a Ps. aeruginosa. The hemolytic Streptococcus in a patient with chronic cystitis with no obvious obstruction cleared up after a course of penicillin.

TABLE 7.—*Results of Therapy in Esch. Coli Infections (Two or More Agents Used Simultaneously)*

	Results of Recultures After a Single Course of Therapy			
	Negative	Positive for Esch. Coli	Organisms Changed Under Treatment	Infection Controlled
Gantrisin® and penicillin	4	..	1 A. aerobactor	3
Gantrisin,® penicillin, and chloramphenicol	..	1		..
Gantrisin® and streptomycin	..	..	1 Staph. albus	..
Gantrisin® and chloramphenicol	..	1		..
Gantrisin® and sulfaguanidine	..	..	1 Str. Faecalis and Staph. albus	..
Gantrisin® and mandelamine®	..	..	1 Str. Faecalis	..
Sulfadiazine and penicillin	..	1		..
Combined sulfonamide and penicillin	..	1		..
Sulamyd® and penicillin	1	..		..
Combined sulfonamide and streptomycin	..	1	1 Ps. aeruginosa	..
Sulfaguanidine and mandelamine®	..	1		..
Sulfaguanidine and streptomycin	..	1		..
Sulfathalidine® and aureomycin	1	..		..
Aureomycin, streptomycin, and penicillin	1	..		..
Aureomycin and streptomycin	1	..		1
Chloramphenicol and penicillin	..	..	1 Ps. aeruginosa	..
Chloramphenicol, penicillin, and streptomycin	1	..		1
Streptomycin and penicillin	..	2	(cord bladders)	..
Streptomycin and terramycin	1	..		..
Terramycin and mandelamine®	1	..		..
Total	11	9	6	5

TABLE 8.—*Results of Therapy in Streptococcus Faecalis Infections*

	Results of Recultures After a Single Course of Therapy			
	Negative	Positive for Str. Faecalis	Organisms Changed Under Treatment	Infection Controlled
Gantrisin®	2	4	1 Esch. coli	1
Sulfadiazine	..	1		..
Combined sulfonamides	..	2		..
Mandelamine®	2	7	3 Esch. coli	1
Streptomycin	1	1		1
Aureomycin	..	2	1 Esch. coli and 1 B. Proteus	..
Chloramphenicol	1	2	4 Esch. coli	..
Terramycin	..	1		..
No.	6	20	10	3
Gantrisin® and penicillin	1	..		..
Gantrisin® and chloramphenicol	1	..		..
Gantrisin® and mandelamine®	..	1		..
Gantrisin® and streptomycin	1	..		..
Streptomycin and penicillin	..	..	1 Esch. coli	..
Streptomycin and chloramphenicol	1	1		1
Streptomycin, aureomycin, and penicillin	..	..	2 Esch. coli	..
Chloramphenicol and aureomycin	..	1		..
Mandelamine® and sulfaguanidine	..	..	1 Esch. coli	..
Mandelamine® and penicillin	..	..	1	..
No. (combined therapy)	4	3	5	1
Total	10	23	15	4

TABLE 9.—*Results of Therapy in Pseudomonas Infections*

	Results of Recultures After a Single Course of Therapy			
	Negative	Positive for Ps. Aeruginosa	Organisms Changed Under Treatment	Infection Controlled
Streptomycin	1	..	2 Str. faecalis	..
Chloramphenicol	..	1		..
Penicillin	..	1		..
Gantrisin®	2	1		2 (prostatitis)
Combined sulfonamides	..	2	1 A. Aerogenes and Esch. coli	..
Calcium mandelate	..	1		..
Penicillin and aureomycin	..	1		..
Penicillin and streptomycin	1	3		..
Streptomycin and chloramphenicol	..	1		..
Streptomycin and aureomycin	..	1		..
Gantrisin® and aureomycin	..	2		..
Gantrisin,® aureomycin, and streptomycin	..	1		..
Gantrisin,® penicillin, and streptomycin	..	3		..
Gantrisin,® penicillin, and chloramphenicol	..	..	1 A. Aerogenes	..
Combined sulfonamide and streptomycin	..	1		..
Chloramphenicol and calcium mandelate	..	1		..
Chloramphenicol, terramycin, aureomycin, and calcium mandelate	..	1		..
Total (30)	4	21	5	2

6. (*a*) Carroll, G.; Allen, H. N., and Flynn, H.: Aureomycin: A Clinical and Laboratory Study of Its Effect in Urinary Infections, J. Urol. **62**: 574 (Oct) 1949. (*b*) Frank, P. F.; Wilcox, C., and Finland, M.: In Vitro Sensitivity of Bacillus Proteus and Pseudomonas Aeruginosa to 7 Antibiotics (Penicillin, Streptomycin, Bacitracin, Polymyxin, Aerosporin, Aureomycin, and Chloromycetin), J. Lab. & Clin. Med. **35**: 205 (Feb.) 1950. (*c*) Felsenfeld, O.; Volini, I. F.; Ishihara, S. J.; Bachman, M. D., and Young, V. M.: A Study of the Effect of Neomycin and Other Antibiotics on Bacteria, Viruses and Protozoa, ibid. **35**: 428 (March) 1950.

7. Carroll et al.[6a] Frank et al.[6b] Kagan, B. M.; Krevsky, D.; Milzer, A., and Locke, M.: Polymyxin B and Polymyxin E.: Clinical and Laboratory Studies, J. Lab. & Clin. Med. **37**: 402 (March) 1951.

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PLAN OF TREATMENT FOR URINARY TRACT INFECTIONS

The data given above illustrate many of the problems arising in the diagnosis and treatment of urinary tract infections. The steps necessary in the planning of logical therapy are obvious. As previously stated, the organism or organisms responsible for the infection must be accurately identified. Foci of infection in direct contact with the urinary tract or those which maintain the supply base for bacteria gaining entrance to the kidneys via lymphatics or blood stream must be eradicated. If roentgenograms, rectal examination, tests for residual urine, or cystoscopy reveal the presence of a lesion which interferes with proper drainage of the urinary tract, such lesions must be corrected before permanent cure of the infection can be effected.

Chemotherapy or antibiotic therapy must be carefully fitted to the bacteriological problem presenting itself.

Table 10 indicates our judgment regarding the use of antibacterial agents, based on information gained on our own cases by the trial and error method, on our own titrations of the sensitivity of the various micro-organisms to the various antibiotics and sulfonamides (summaries of these titrations will be shown in another communication), and on the titrations and clinical results reported by a number of authors.[8] Because in our earlier work our titration technique did not always give consistent results, and because it has been possible to set up the titrations no more often than once a week, the information gained by these tests was not always utilized. When it was possible to administer the drug found by in vitro tests to be most effective, the clinical results were as a rule better than when the micro-organisms in question were relatively insensitive. For instance, in Esch. coli infections when a given strain was sensitive to a given antibiotic in a titer below 20 γ per milliliter—usually less than 10 γ—and that antibiotic was administered in adequate dosage, recultures revealed no growth of the micro-organism in question in 70% of the cases. In the cases in which the sensitivity was above 25 γ per milliliter or in which no sensitivity tests were done, 39.9% of the colon bacilli were eliminated. In the Str. faecalis cultures the differences were not so great, 43% of the recultures being negative for Str. faecalis when the antibiotics shown by in vitro tests to be most effective were used as against 37% in the controls. Our observations at this time are too limited to say more than this.

Without question, the sensitivity tests are of utmost value in planning treatment for patients whose urinary cultures have not become sterile following one round of chemotherapy or antibiotic therapy, or for those whose original culture reveals two or more responsible micro-organisms. Aureomycin, terramycin, and chloramphenicol have proved a most important addition to the therapeutic attack because they are effective against both gram-positive and gram-negative urinary tract invaders—with notable exceptions, such as the ineffectiveness of aureomycin against Pseudomonas and of terramycin against Bacillus proteus. For the same reason, and because they are relatively inexpensive, sulfa drugs occupy an important position in the therapy of these conditions. Gantrisin,® sulfadiazine, and the combined sulfas are, however, strangely ineffective against Str. faecalis. Both penicillin and sulfonamides are effective against hemolytic Streptococcus infections, but against staphylococci, aureomycin and terramycin are usually more successful. In vitro tests may reveal, however, that the sensitivity of any given strain within a species to antibiotics may differ sharply from the sensitivities of the majority of the strains.

TABLE 10.—*Choice of Antibacterial Agents in Urinary Tract Infections**

Adult Minimum daily dose.... Minimum duration Rx..	Aureomycin 2 Gm. 7 Days	Terramycin 2 Gm. 7 Days	Chloramphenicol 2 Gm. 7 Days	Streptomycin 1-2 Gm. 7 Days	Penicillin 800,000 U. 7 Days	Gantrisin® 6 Gm. 10 Days	Mandelamine® 8 Gm. 10 Days	Rational Combinations
Organism								
Esch. coli.....	1	1	1	2	..	2	3	Aureomycin, terramycin, or chloramphenicol + gantrisin®
Str. faecalis.....	1	1	1	2	2	3	3	Aureomycin, terramycin, or chloramphenicol + gantrisin® or penicillin
Ps. aeruginosa †.....	3	2	..	2	..	2	..	Terramycin or streptomycin + gantrisin®
B. proteus.....	3	..	1	2	2	1	..	Chloramphenicol + gantrisin®
A. aerogenes †.....	3	2	2	2	..	2	..	Terramycin, chloramphenicol, or streptomycin + gantrisin®
K. pneumoniae †.....	2	2	2	2	..	..	..	Chloramphenicol + streptomycin
St. aureus or albus..	1	1	3	..	2	3	..	Aureomycin + penicillin
Str. hemolyticus.....	2	2	..	..	1	2	..	Penicillin + gantrisin®

* 1 = 1st choice. 2 = 2d choice. 3 = 3d choice.
† Polymyxin, aerosporin,® and neomycin appear most effective in these infections, but are not in general use because of their toxicity.

8. Schweinburg and Rutenberg; Rhoads et al.[2] Svec et al.[4] Carroll et al.[6a] Frank et al.[6b] Felsenfeld et al.[6c] Kagan et al.[7] (*a*) Frank, P. F.; Wilcox, C., and Finland, M.: In Vitro Sensitivity of Coliform Bacilli to 7 Antibiotics (Penicillin, Streptomycin, Bacitracin, Polymyxin, Aerosporin, Aureomycin and Chloromycetin) J. Lab. & Clin. Med. **35**: 188 (Feb.) 1950. (*b*) Carroll, G.: Discussion of Terramycin in Urinary Tract Infections, J. Urol. **65**: 343 (Feb.) 1951. (*c*) Thompson, H. T.: Clinical Evaluation of Gantrisin (NU-445), ibid. **62**: 892 (Dec.) 1949. (*d*) Carroll, G.; Allen, H. N., and Flynn, H.: Gantrisin: An in Vivo and in Vitro Study in Urinary Infections, Urol. & Cutan. Rev. **53**: 677 (Nov.) 1949. (*e*) Logan, G. B.: Urinary Infections in Children, Proc. Staff Meet., Mayo Clin. **24**: 562 (Oct. 26) 1949. (*f*) Cook, E. N.: Symptoms, Diagnosis and Treatment of Urinary Infections of Tract, M. Clin. North America **32**: 1071 (July) 1949. (*g*) Birchall, R., and Alexander, J. E.: Medical Aspects of Pyelonephritis, Medicine **29**: 1 (Feb.) 1950. (*h*) Nichols, A. C.: Bactericidal Action of Streptomycin-Penicillin Mixtures in Vitro, Proc. Soc. Exper. Biol. & Med. **69**: 477 (Dec.) 1948. (*i*) Lazarus, J. A., and Schwarz, L. H.: Clinical Study of a New Sulfonamide (NU 445) in Treatment of Urinary Tract Infections, J. Urol. **61**: 649 (March) 1949. (*j*) Stewart, B. L., and Lash, J. J.: The Clinical Use of NU-445 (Gantrisin) in the Treatment of Urinary Tract Infections: A Report of 100 Cases, ibid. **64**: 801 (Dec.) 1950. (*k*) Adcock, J. D., and Plumb, R. T.: Streptomycin for Urinary Tract Infections, J. A. M. A. **133**: 579 (March 1) 1947. (*l*) Pulaski, E. J., and Amspacher, W. H.: Streptomycin Therapy in Urinary Tract Infections, Surg., Gynec. & Obst. **85**: 107 (July) 1947. (*m*) Garvey, F. K.; Cline, W. A., and Meads, L.: Chloramphenicol in Bacillary Infections of the Urinary Tract, South. M. J. **43**: 85 (Feb.) 1950. (*n*) Chittenden, G. E.; Sharp, E. A.; Vonder Heide, E. C.; Bratton, A. C.; Glazko, A. J., and

(Footnote 8 continued on next page)

Vaginal, urethral, prostatic, and enteric infections must be eliminated, and diabetes, if present, must be under good dietary and insulin control if the associated urinary tract infection is to be eliminated by chemotherapy or antibiotic therapy.

What we consider minimal dosage schedules are indicated in Table 3. In our own work, however, we have increased the dose of the oral antibiotics to 3 gm. daily and the duration of the treatment to 10 to 14 days in the patients who can afford it. We have already shifted to a dose of 2 gm. of gantrisin® every six hours and are attempting to continue therapy as long as 14 days. The dose of streptomycin has not been increased.

Our own experience suggests that the use of proper combinations of antibiotics with sulfas and with each other may prove a more efficient way of controlling urinary infections than the use of a single antibiotic or sulfa alone. One of us has shown that in Esch. coli infections, especially those associated with infectious colitis of long standing, the simultaneous use of succinylsulfathiazole (sulfasuxidine®) and streptomycin over considerable periods has given much better results than either agent used alone.[s,u] It is hoped that eventually the toxic factors which adversely affect the kidneys and nervous system will be eliminated in aerosporin, polymyxin, and neomycin, as in vitro studies indicate their great effectiveness against Pseudomonas, A. aerogenes, and K. pneumoniae infections, as well as Esch. coli.

SUMMARY

In our series more than 75% of the patients with urinary tract infection had demonstrable obstructions in the urinary tract. The actual incidence was probably higher. In this series it is shown that, with the present methods of treatment commonly used for urinary tract infections, in the commonly employed doses, in slightly more than half the urine was rendered bacteriologically negative for the micro-organism found in cultures before treatment, except in Pseudomonas infections. The recultures were made not earlier than two days to three weeks after course of therapy was completed. The patients were observed over a period of several months, and it was found that only 8 to 15% were permanently "cured." The "cures" were in persons who had no obstruction to urinary outflow originally, or who while under our observation had urinary tract obstructions corrected. In 15 to 30% of cases the original micro-organisms found in cultures disappeared under treatment, but a different species emerged.

Despite these discouraging results, the promptness with which fever, back pain, dysuria, and frequency were relieved and the urine rendered temporarily free of pus by the use of modern antibiotics and sulfonamides was striking. It is confidently believed that the percentage of patients in whom infection can be permanently eradicated can be increased by beginning treatment with (1) identification of the responsible micro-organism, (2) locating all lesions interfering with free flow of urine through the urinary tract, and (3) recognizing foci of infection in contact with or draining into the urinary tract by the lymphogenous or hematogenous routes. After taking whatever additional steps are necessary in relation to steps 2 and 3, the antibiotic or chemotherapeutic agent—or combination of agents—shown by previous experience most likely to be effective against the organism in question should be given in full doses for not less than one week. Table 10 contains suggestions for the most rational choice of antibacterial agents after the responsible bacteria have been identified. If cultures taken 48 hours after the last dose of the drug are positive, sensitivity tests should be made to determine which of the various antibiotics are most effective against the micro-organism in question. The next agent to be used should be chosen on this basis. Often, a combination of two therapeutic agents will be found more effective than a single one, especially in infections due to more than one micro-organism. Suggestions for the most promising combinations to use depending on the responsible micro-organism are made. The present dosages and duration of treatment may have to be increased to improve the results in the treatment of urinary tract infections.

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The Golden Age of Medicine.—The rapid advances made in scientific medicine and the extraordinary accumulation of knowledge in the present century were made possible largely owing to the fundamental discoveries of a few men during the latter half of the nineteenth century. Of these the most outstanding was unquestionably Louis Pasteur. . . . He pointed the way not only to the causation but also to the prevention and treatment of the microbic diseases. He discovered and applied the principles of active immunization by using attenuated cultures. . . . Lister revolutionized the practice of surgery. . . . Then came Koch, who with Pasteur was the co-founder of the modern science of bacteriology. . . . Ehrlich introduced new methods of staining blood smears and laid the foundations of the modern science of hematology. He was also the first to set out to produce synthetically a drug for a specific purpose, and thus established chemotherapy. . . . Takaki proved the dietetic origin of beriberi and outlined measures which led to its eradication from the Japanese navy. Shortly afterwards Eijkmann produced beriberi experimentally in fowls, thus proving beyond all question the importance of accessory food factors. Von Behring in 1890 discovered antitoxins and the principle of passive immunization. Röntgen in 1893 discovered X-rays. . . . In 1896 Ross proved that the anopheles mosquito was the vector of malarial parasite and devised methods for the effective prevention of malaria, and in the same year Sir Almroth Wright and others introduced antityphoid inoculation. . . . At the close of the century in 1898 the Curies isolated radium. It is apparent, therefore, that although the treatment of disease at the beginning of this century was largely based on empiricism, the original and brilliant discoveries, the further development of which was responsible for the rapid advances in the twentieth century had already been made. . . . The present century grasped this rich heritage with both hands, and proved itself not unworthy of the gifts it had received.—Leslie Hurley, The Golden Age of Medicine, *The Medical Journal of Australia*, Sept. 22, 1951.

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RENAL TUMORS

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In dealing with renal tumors the urologic surgeon and the anesthetist often encounter major difficulties. A common understanding of individual problems brought about by joint discussions will result in better teamwork. Their cooperative efforts will be reflected in the statistical analyses of morbidity and mortality. In this discussion a simple classification of renal tumors will be followed. The principal types of renal tumors are hypernephroma, carcinoma of the renal pelvis (papillary, noninfiltrating, or infiltrating) sarcoma, and Wilms' tumor.

In the past the use of the term hypernephroma has been criticised; however, this term serves as well as any other to designate the type of renal tumor that has certain biologic and histological characteristics. According to McDonald,[1] Bell,[2] and others, small adenomas are precursors of hypernephroma. They occur frequently in the renal parenchyma, but only after they have increased in size to approximately 3.5 cc. or larger do they become malignant. At that stage the tumor usually invades the vein, and metastases result. The cellular pattern of hypernephromas is similar to that of the smaller adenomas. McDonald [1] believes that metastasis from hypernephromas takes place mainly by vein, never by artery and rarely, if ever, through the lymphatics. In reviewing a series of 600 renal tumors at the Mayo Clinic he found hypernephromas in 82% of the cases. Small adenomas were also found in 16% of the hypernephromatous kidneys. About 4% of the kidneys examined at routine post mortem also contained benign adenomas.

Biologically and histologically, tumors of the renal pelvis are usually similar to those of the bladder. The prognosis in cases of infiltrating tumors of the kidney is grave. Wilms' tumor is an embryonal adenocarcinoma. Whether it occurs in children or adults is irrelevant in the final outcome, for the prognosis in all cases of Wilms' tumors is unfavorable. Sarcoma of the kidney is similar to sarcoma of other parts of the body.

SYMPTOMS AND DIAGNOSIS

Patients who have renal neoplasm may have symptoms of hematuria, pain, and mass in the loin. These three symptoms are found simultaneously in approximately 40% of cases. In the remaining instances only one or two of the above-mentioned symptoms may be manifested. Any one of these three symptoms requires a study of the upper urinary tract, including pyelography. In searching for the cause and site of hematuria, the clinician must not be misled if on cystoscopy he sees a bleeding point in the bladder or on the prostate gland. Unfortunately, many patients with renal tumor have no symptoms referable to the kidney, but come to the physician complaining of symptoms directly attributable to a metastatic lesion. Pyelography, intravenous or retrograde, is mandatory when renal neoplasm is suspected. A carcinoma of the renal pelvis rarely escapes detection in a well-made pyelogram. However, a tumor in the renal parenchyma may be so located that it causes neither pyelectasis nor caliectasis.

If renal function is satisfactory, excellent delineation of the calices and pelvis can be obtained by intravenous pyelography, using compression over the lower abdomen to obstruct the ureters. A rubber bag from the arm band of a blood pressure cuff is placed between the abdomen and a wide canvas belt. The belt encircles the patient but is not attached to the x-ray table. As soon as the contrast medium has been injected into the vein, the compression bag is distended to 100 mm. Hg. To maintain the pressure both tubes from the bag are clamped to prevent leakage of air. After the desired series of exposures has been made, including the 25-minute film, the compression is released and a second 25-minute film is exposed. A few minutes later a third 25-minute film is made. The technique of retrograde pyelography is so well known that it need not be mentioned at this time. Whatever type of x-ray examination is done, the technique should be such that the film shows the soft tissue shadow of the renal parenchyma. Again, let us emphasize that a normal outline of the renal pelvis and ureter does not rule out renal neoplasm. Such a lesion may be located in the renal parenchyma so far from the pelvis that it causes no deformity of the calices or pelvis.

When hematuria or other clinical signs of renal neoplasm are present, arteriography is the most valuable diagnostic procedure at the physician's command. The majority of kidney tumors have blood sinuses. Therefore, if a radiopaque solution is injected into the aorta proximal to the renal arteries and the film is exposed while the opaque medium is in the sinuses of the tumor, a stippling will be seen in the pyelogram. Such a pooling seen in the roentgenogram of the kidney is pathognomonic of renal neoplasm. By arteriography a vascular tumor can be demonstrated, even though it is very small.

Our technique for arteriography [3] is as follows. The evening before the examination the patient is given 2 oz. (60 cc.) of castor oil; no food is allowed until after examination the following day. With the patient in the prone position on the x-ray table, a 14 by 17 in. (36 by 43 cm.) film of the upper abdomen and lower chest is made. After the control film has been developed and found satisfactory as to the position of the patient and the x-ray technique, the patient is anesthetized, usually by thiopental (pentothal®) sodium. The skin is prepared, and the patient is draped over the left lumbar and lower thoracic regions. An 18-gage, 12 cm. needle is passed through the skin about 5 cm. to the left of the spinous

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Additional references are included in the authors' reprints.

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process of the vertebra and about 1 cm. distal to the 12th rib. The needle is advanced toward the patient's right axilla. As the needle is advanced, the vertebra is usually encountered. After the point of the needle has passed over the body of the vertebra, the stylet is removed and the needle slowly advanced. Blood coming through the needle signifies that the aorta has been entered. One of the hazards of arteriography is injection of the opaque medium into a smaller artery. To prevent entrance into branches of the aorta the needle is directed cephalad, so that it will enter the aorta well above the celiac axis. Two small tubes are then connected to the needle. One tube is attached to a syringe filled with isotonic sodium chloride solution. Barbotage will ascertain whether the needle is in the aorta.

The other tube is used for injecting the contrast medium. We use 6 to 10 cc. of an 80% solution of sodium iodide or 10 to 20 cc. of 70% iodopyracet concentrated solution (diodrast*) or methiodal (skiodan*) sodium. The amount used is governed by the size of the patient. The injection must be made rapidly; otherwise, dilution by the blood stream takes place so quickly that delineation of the arteries is indistinct. The x-ray equipment should permit exposure of two or more films in a matter of a few seconds. A single roentgenogram must never be relied upon, especially if it does not reveal any abnormality. The flow of blood through the renal circulation is very rapid. Unless the exposure of the film is made at the instant the opaque medium reaches the sinuses of the tumor, the pooling or stippling will not be visualized. The first film should be made at the instant the opaque medium is injected. Other films should follow every second or two.

During the past 14 years in many instances we have demonstrated the presence of a renal tumor by arteriography in patients whose pyelograms showed a normal outline of the renal pelvis and ureter. In our patients no false-positive diagnosis has been made by arteriography. It is advisable to administer intravenously 1,000 cc. of 5% dextrose in distilled water as soon as the patient is returned to bed. We believe the incidence of iodinism has been less following the use of parenteral fluid. Finally, if arteriography is not feasible, surgical exploration should be performed without undue delay. The practice of doing pyelography every few weeks or months when a definite diagnosis has not been established should be condemned. Procrastination jeopardizes the patient's life. The neoplasm may advance from a curable to an incurable stage.

PREPARATION FOR SURGERY

Many patients with a diagnosis of renal tumor are in excellent physical condition and need little preparation for surgery other than a thorough study of their condition and the type of treatment indicated in their specific cases. However, patients who are debilitated and anemic from prolonged blood loss or who have other unrelated conditions, such as cardiac or metabolic diseases, must receive adequate preoperative treatment if the surgical outcome is to be satisfactory. In these patients anemias are corrected by the administration of whole blood. The electrolytic balance, serum protein levels, and hydration are brought within normal limits, if possible, before operation. Many patients who are operated on for removal of renal tumors lose large quantities of blood during operation, usually because of the vascularity of the kidney bed and occasionally because the kidney pedicle slips from the clamp or an aberrant vessel is inadvertently sectioned previous to ligation. The surgical treatment of renal tumors can always be carried out more safely if an adequate quantity of blood is available, so that blood can be replaced at once if hemorrhage occurs. It is important in most instances to replace even moderate amounts of blood lost during surgery, so that the patient will not go into shock. Any condition of shock may result in oliguria or anuria. This condition is serious in normal patients and can be doubly serious in patients who have only one remaining kidney. Shock must be prevented at all costs, for blood replacement may not be adequate if it is postponed until the postoperative period.

ANESTHESIA

Anesthesia for arteriography may be secured simply, provided the anesthetist is thoroughly familiar with the drug used and the conditions necessary for obtaining successful arteriograms. Our patients are placed on the x-ray table in the face-down position; 2% thiopental sodium solution is administered intravenously and rather rapidly until the superficial reflexes are absent and respiration is normal. The patient should be well anesthetized, for the slightest movement before or during the injection of the iodide solution may result in the dislodgement of the needle from the aorta, with a resultant extravascular injection. After the x-ray exposures the patient may be turned on his back, and he usually responds to stimulation within a few minutes. In most instances 0.5 gm. of thiopental sodium is sufficient.

Anesthesia for the surgical removal of renal tumors may be carried out by using spinal, inhalation, or intravenous anesthesia with gas or curare in the majority of adult patients. We prefer spinal anesthesia in most cases so that the surgeon will have optimal operating conditions. Spinal anesthesia produces muscular relaxation that cannot be duplicated by any other method without seriously depressing cardiorespiratory function. Spinal anesthesia also contracts the gut so that it falls away from the operative field, allowing adequate exposure without the use of many abdominal packs and vigorous retraction. During the past few years we have used a light dibucaine (nupercaine*) hydrochloride anesthesia in the majority of our cases. Our preoperative medication in these patients is conservative. A small dose of pentobarbital sodium, usually 1½ grains (90 mg.), is given two hours before operation. Morphine or meperidine (demerol*) hydrochloride is used as a narcotic agent. We do not use morphine in doses greater than ⅙ grain (10 mg.), nor do we exceed 75 mg. doses of meperidine hydrochloride. Atropine and scopolamine hydrobromide are usually avoided. We believe these drugs contribute nothing to the patient's safety during spinal anesthesia, and certainly their drying effect on the mucous membranes adds to postoperative discomfort.

The patient is first placed on the operating table in the lateral position with the operative side up. An intravenous infusion of 5% dextrose in distilled water is started. The patient is then given thiopental sodium intravenously until the eyelid reflexes have been abolished.

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Following preparation of the skin of the back, a 21-gage or 22-gage spinal needle is inserted into the subarachnoid space. The dose of dibucaine hydrochloride solution to be used is determined and cerebrospinal fluid approximately equal in volume to the solution to be injected is removed from the subarachnoid space and discarded. The dibucaine hydrochloride solution, which has been previously warmed to body temperature, is injected into the subarachnoid space very slowly, so that it will tend to collect in the uppermost portion of the dural sac. The spinal needle is removed, and the table is tilted to raise the shoulders to a point where the spinal column makes an angle of approximately 10 degrees with the horizontal. Thus the dibucaine hydrochloride is allowed to flow slowly cephalad to the level of the fourth or fifth dorsal vertebra. If this is not done, traction on the renal pelvis may result in severe shoulder pain, necessitating administration of large quantities of thiopental sodium during manipulation of the kidney. The table is returned to the horizontal position approximately 20 seconds after the drug has been injected. The dose of dibucaine hydrochloride for a given patient depends entirely on the height of that individual. Amounts as small as 8 or 9 cc. of 1:1,500 solution have been used on patients 5 ft. (152 cm.) in height. This dose may be increased to as much as 13 or 14 cc. in patients who are 6 ft. 6 in. (198 cm.) tall. The average dose in the male of 5 ft. 11 in. or 6 ft. is 12 cc. All of our spinal punctures are made with the lateral approach. Our impression has been that the incidence of spinal headache has been reduced and the tender point of which patients frequently complain following lumbar puncture has been almost completely eliminated.

After the return of the operating table to the normal horizontal position the patient is lifted from the table by attendants and a firm wedge-shaped pillow designed for this purpose is placed between the crest of the ilium and the lower ribs. Adequate exposure can be obtained in many patients without the kidney rest by using this pillow routinely. If the kidney rest must be raised, the pillow tends to prevent severe trauma to the lower ribs and compression of the dependent lung by its cushion-like action. The patients are always kept in an amnesic state by the intermittent administration of small amounts of thiopental sodium, and oxygen is given frequently. Anesthesia usually lasts more than two and one-half hours. Small amounts of vasopressor drugs may be indicated occasionally in order to sustain blood pressure within normal limits. However, we have observed that blood pressure falls are not profound when this technique is used.

Anesthetists accepting the responsibility of maintaining anesthesia and administering replacement fluids to patients operated on for renal tumor must be well grounded in the fundamentals of intratracheal intubation and supported respiration, for occasionally the pleura is intentionally or inadvertently opened. This is especially true if the tumor is large or involves the superior pole of the kidney. A sudden collapse of the lung, if not recognized and reexpanded, might result in a fatality. Occasionally patients are encountered for whom the use of spinal anesthesia is contraindicated. These patients may be safely anesthetized by using gas-oxygen-ether or thiopental sodium-gas-curare anesthesia, provided the airway is kept patent and severe depressions are avoided. If inhalation or intravenous methods are used, we prefer intratracheal techniques. In this way obstruction can be prevented and respiratory depressions, which might be brought about by attempts to produce profound relaxation, can be corrected by the intermittent compression of the anesthetic bag to the extent of assuring an adequate tidal ventilation. In our hands the spinal technique described has been far superior to any of the general anesthetic techniques we have used. If a transthoracic approach is planned, endotracheal anesthesia is necessary.

Wilms' tumors in adults may be removed with the patient under spinal anesthesia by a technique similar to that described, or with any other spinal anesthetic drugs. A transabdominal incision is used for the removal of these tumors. Adequate exposure is essential for satisfactory completion of the surgery. Small children undergoing surgery for Wilms' tumor must be operated on under general anesthesia. We prefer to use tribromoethanol (avertin®) as a basal narcotic agent in most cases. Children under 7 years of age are not given any narcotics or belladonna drugs, and doses of 70 mg. of tribromoethanol per kilogram of body weight are never exceeded. After the administration of tribromoethanol in the child's room he drops off into light sleep. He is then taken to the operating room where anesthetics are given by inhalation. Intubations are done in children routinely. If the child is under 5 years of age, he will probably undergo anesthesia more safely if the anesthetic agents and oxygen are administered to him through a Digby-Leigh valve. This valve allows the child to breathe more freely than he would be able to do through most anesthetic machines, for resistance to respiration has been reduced to a minimum and there is no rebreathing. If the pleura is opened, complete expansion of the lung can be maintained by manual compression of the anesthetic bag.

Blood loss must be evaluated accurately and replaced during operation. Too frequently the size of the patient is not taken into consideration when blood loss is estimated. A loss of 300 cc. from the circulation of a 40 lb. (18.1 kg.) child is equivalent to 25% of his total blood volume. This amount, which is frequently lost without producing significant circulatory changes in adult patients, may result in severe shock in children.

TREATMENT

Nephrectomy is the recognized treatment for renal neoplasm. The question of preoperative and postoperative irradiation of renal tumor has not been settled. Irradiation will shrink a Wilms' tumor, making it amenable to surgery, but irradiation alone does not destroy all the neoplastic cells; therefore, nephrectomy is imperative if the patient is to survive. Another factor concerning irradiation is illustrated by an unpleasant experience we had with postoperative irradiation in an 8-year-old boy whose preoperative diagnosis was Wilms' tumor. The diagnosis of this huge tumor was never clearly established. The young man is still living and is apparently well 16 years after the operation. Unfortunately, there is a marked scoliosis owing to the failure of irradiated tissue to grow with the remainder of the body. Whether this resulted from improper irradiation we are not prepared to say, but the complication should be kept in mind.

When nephrectomy is done, it is of utmost importance to expose and ligate the renal veins and arteries before manipulating the tumor mass. If veins are involved in the growth, as frequently is the case, they must be removed with the tumor if at all possible. An abdominotransperitoneal approach has been, in the past, the recognized way to deal with bulky renal tumors. However, within the last few years two types of thoracic approaches have been devised by two different surgeons. Since the major portion of the kidney and its pedicle is within the thoracic cage, it has been found that by severing the 12th, 11th, and sometimes the 10th rib posterior to the angle the lower thoracic cage may be mobilized to make exposure of the renal pedicle quite satisfactory. Chute [4] has devised an operation in which he removes the 10th or 11th rib and then traverses the pleural cavity and goes through the diaphragm and into the peritoneal cavity. Chute and his co-workers have excellent exposure of the renal pedicle. Nevertheless, we must admit, being too unfamiliar with chest surgery, we have not used his incision.

Nagamatsu [5] has devised an approach involving exposure of the lower two or three ribs at the posterior angle. After severing the ribs at that location, he removes a short segment from each rib, so that after the operation there will be no overriding of the rib ends to cause pain. He injects each intercostal nerve exposed with beta-diethylaminoethyl-para-ethoxybenzoate hydrochloride (intracaine®) in oil or pinches the nerve with forceps to prevent postoperative pain. The incision is extended anteriorly under the 12th rib, as far as necessary for satisfactory exposure. He does not intentionally enter the pleural or peritoneal cavity. We have used the incision of Nagamatsu and found it more satisfactory than the transperitoneal approach. However, in one patient with a bulky tumor extending medially from the upper pole with an aberrant artery in the lower pole, the loss of blood from the sinuses was greater than it should have been. Fortunately, this patient survived and made a good recovery.

SUMMARY

We believe it is important to make a detailed preoperative diagnosis of the extent and location of the tumor in relation to the kidney and also to know the exact location of the renal blood supply. This information can be obtained readily by arteriography. Careful preoperative preparation is essential in patients who are debilitated. Carefully planned anesthetic management reduces morbidity and mortality. Blood loss should be replaced during operation.

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ANESTHETIC PROBLEMS IN HORMONAL DISORDERS OF THE ADRENAL GLANDS

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The number of patients afflicted with recognized disorders of the adrenal glands is obviously small. Even smaller at present is the number with adrenal disturbances who are candidates for surgical treatment. As knowledge, including improved diagnostic measures, concerning these disease processes is developed, operative intervention will probably be increased in scope and frequency in the care of these patients. However, the statistical incidence of these diseases in no way reflects the interest or importance of the adrenal glands in clinical medicine and surgery. These small glands exercise widespread influence on many physiological adjustments of the body to the environment. Studies have demonstrated some of the effects of the adrenals on circulation,[1] electrolyte metabolism,[2] renal function,[3] carbohydrate metabolism,[4] and other endocrine organs.[5] Recently there has been extensive interest and speculation on the relationship of adrenal activity to a large variety of apparently unrelated diseases and environmental stresses.[6]

In view of the intrinsic interest in the effects of the adrenal glands on the body economy and the difficult and complex problems their dysfunction may produce in patients who require operative intervention, it was thought that a consideration of anesthetic problems and some surgical implications for patients with abnormal adrenal activity would be profitable. This paper concerns the principles of practical aspects of the management of patients with adrenal diseases who require operation.

HYPOFUNCTION OF THE ADRENAL CORTEX

Addison's Disease.—It has been reported that patients with Addison's disease are susceptible to infections, to the loss of sodium chloride and sensitive to certain drugs (narcotics, sedatives, insulin, and thyroid hor-

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mone). They are considered as grave a risk for anesthesia and operation as any in clinical practice. On the basis of previous experience, the hesitation to subject the patient with Addison's disease to the strain of anesthesia, operation, or childbirth is entirely understandable. As recently as 1929 Snell and Rowntree [7] believed the risk of operation in these patients prohibited any expectation of success. Even as minor a procedure as dental extraction was fraught with the possibility of Addisonian crisis and death. In fact, Greene and his colleagues [8] in 1933 reported the first known survival of operation by a patient with Addison's disease. In the 15 operative cases reported by these authors, only 4 patients survived relatively minor surgical procedures. Only within the past two decades, with better comprehension of the role of sodium chloride therapy in adrenal cortex insufficiency and the availability of extracts of the adrenal gland and, more recently, cortisone, have a number of survivals after operation been reported in the literature. However, even with increased understanding of this disease and its proper management, surgical intervention has never been undertaken lightly in patients with hypofunction of the adrenal cortex.

It is not difficult to understand why these patients, if inadequately treated, withstand anesthesia and operation so poorly. The specific chain of biochemical events leading to Addisonian crisis may be precipitated with relative ease in the patient subjected to anesthesia and operation. Loeb [2] and Harrop [9] demonstrated that the events preceding crisis begin with the loss of sodium and chlorides in the urine and the consequent loss of relatively large quantities of water. Since the plasma volume is also depleted, the available circulating fluid in the blood is reduced. Fasting, nausea, vomiting, and occasionally diarrhea, which are accentuated if not caused by anesthesia and operation, contribute significantly to the primary derangement, leading to a further loss of circulating blood dehydration, and, finally, circulatory collapse. Even though this series of events in the Addisonian crisis is well documented, it is not completely clear why patients with adrenal cortex insufficiency respond regularly in this fashion to the various stresses of infections, operations, and other abnormal environmental situations. Perera [10] has suggested that these patients may have a defect in the response of the autonomic nervous system that contributes to their inability to react normally to altered environmental conditions or even to minor stimuli.

Anesthetic and surgical experiences in patients with Addison's disease are not many. Recently, one of us (E. M. P.) [11] examined the influence of anesthesia and operation on morbidity and mortality in 19 patients subjected to 23 anesthetic procedures at the Presbyterian Hospital in New York and the Peter Bent Brigham Hospital in Boston. These patients represent, as nearly as could be determined, the total number of operative cases at both institutions in the last two decades. Dental extractions were not included. The youngest patient was 12 years old and the oldest 59. Ten patients were males and nine were females. The known duration of adrenal cortex insufficiency varied from three months to six years.

The presence of Addison's disease was not recognized prior to operation in five patients. Of these five patients, one died on the operating table, two died following postoperative circulatory collapse, and operation was cancelled for one because of uncontrollable hypotension during anesthesia. The fifth patient suffered a severe postoperative circulatory collapse but recovered. None of these patients was prepared with sodium chloride or specific hormone therapy prior to anesthesia and operation. The 14 patients whose disease had been diagnosed were prepared with adequate doses of desoxycorticosterone acetate and/or adrenal cortex extract and sodium chloride before operation or obstetrical delivery. In the patients who were properly treated with sodium chloride and desoxycorticosterone acetate or adrenal cortex extract, premedication with belladonna drugs, morphine, meperidine (demerol®) hydrochloride, or a barbiturate appeared to be satisfactory and did not produce undue depression. This finding was rather surprising in view of the traditional expectation that potent hypnotic or sedative drugs might precipitate Addisonian crisis. In fact, difficulty with depressant drugs was observed only in the patients whose disease was unrecognized prior to the administration of anesthesia.

Various anesthetic agents and techniques were used. Ten patients were anesthetized with ether, eight with cyclopropane, one with thiopental sodium and nitrous oxide, and four were given local or regional anesthesia. A thorough analysis of the physiological changes that occurred during anesthesia or in the postoperative period demonstrated comparatively little relationship between the anesthetic agent or technique employed and the complications that arose. All of the unprepared patients who died had been anesthetized with ether. However, it must be reemphasized that no patients who died had received adrenal cortical hormone or sodium chloride therapy prior to or during anesthesia and operation.

The single greatest complication that occurred during anesthesia or postoperatively was hypotension. There was no specific relationship between hypotension and the type of anesthesia employed. It was rather striking that hypotension usually appeared suddenly during anesthesia. The hypotension was vigorously treated as presumptive evidence of an impending Addisonian crisis. Hypotension was managed by the intravenous administration of water-soluble whole adrenal cortex extract, whole blood, or plasma. In fact, the maintenance of satisfactory arterial blood pressure appeared to be a most useful clinical guide to the administration of adrenal cortex extract as well as parenteral fluids. Two patients showed fluid retention, edema, and definite evidence of conges-

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tive heart failure postoperatively. These two patients had received excessively large doses of desoxycorticosterone acetate, and the edema and congestive failure disappeared only when the drug was withdrawn.

The conclusion from this study was that a specific relationship could not be established between the precipitation of Addisonian crisis and the anesthetic agent or operative procedure. There was also little doubt that circulatory collapse was the most dangerous and the most frequent complication and that it occurred regardless of the type of anesthesia and operation. Circulatory collapse was minimized by proper preparation before operation with adrenal cortex extract in large doses and/or desoxycorticosterone acetate and sodium chloride. Furthermore, hypotension during the anesthetic period could be controlled best by the administration of aqueous adrenal cortex hormone extract together with sodium chloride and whole blood. The postoperative management of circulatory collapse was essentially that outlined by Thorn.[12] Apparently patients with Addison's disease respond to the stress of operation and anesthesia in the same manner as other patients but with a considerably narrower range of compensation. In order to minimize, from the anesthetic and surgical standpoint, the possibility of Addisonian crisis, great precision must be exercised in the administration of anesthesia to avoid anoxia, asphyxia, or hypotension. Agents or techniques that regularly produce significant falls in arterial pressure or are frequently associated with anoxia are best avoided. Gentleness and care in surgical manipulation to minimize hemorrhage and excessive trauma are equally essential. However, there is little question that the survival of anesthesia and operations by patients with adrenal cortex insufficiency depends on good preoperative preparation and the continuation of intelligent supervision and replacement therapy with adrenal cortex extract, sodium chloride, dextrose, and water to maintain electrolyte and circulating blood volume as near normal levels as possible. The anesthesiologist and the surgeon can do comparatively little in a positive constructive way in helping the patient through operation and anesthesia; however, inept or mismanaged anesthesia and operation are potentially very harmful, so that the operating team must exercise its greatest judgment and skill in the technical management of the patient with adrenal cortex insufficiency.

Suprarenal Apoplexy (Waterhouse-Friderichsen Syndrome).—Although this almost uniformly fatal disease has been known since 1894,[13] it was first summarized in a review by Waterhouse in 1911.[14] Most authors familiar with this syndrome agree with Martland [15] that the classic syndrome of cyanosis, purpura, petechiae, and bilateral massive adrenal hemorrhage is associated in the large majority of cases with a meningococcic septicemia. The disease is fulminating and usually terminates fatally within 24 to 48 hours. Its termination is characterized by hyperpyrexia and circulatory collapse. Treatment usually consists of combating sepsis, control of the vascular collapse, and supportive adrenal cortex therapy. This lesion has a slight but curious interest for anesthesiologists and surgeons. Occasional cases of the Waterhouse-Friderichsen syndrome are associated with surgical lesions, e. g., peritonitis, arterial embolism, and other surgical catastrophes. Although, to the best of our knowledge, no patient with massive bilateral adrenocortical hemorrhage has successfully been subjected to operative treatment of an acute surgical situation, it seems possible, with the availability of potent adrenal cortex hormones, such as cortisone, that successful operative cure may be hoped for in the future.

One such case was observed recently at the Presbyterian Hospital.[16] The patient was a middle-aged white man with embolism in a femoral artery. Acute and rapidly fatal circulatory collapse developed. At autopsy severe bilateral adrenal hemorrhage was found. Possibly adequate hormonal replacement would have permitted successful embolectomy. In the light of present knowledge, nothing further can be stated, except that the amelioration by operation of an occasional serious surgical lesion associated with severe, apparently spontaneous suprarenal hemorrhage is possible with hormonal therapy.

ADRENAL CORTICAL TUMORS

Nonhormonal Tumors.—The surgical and anesthetic implications of these lesions must be contrasted briefly with those of other tumors of the adrenal cortex, which pose much more serious problems. Nonhormonal tumors produce signs and symptoms referable to any large retroperitoneal growth. One of us (G. F. C.) in a previous communication has described the clinical picture of these lesions in some detail.[17] Essentially, the presenting symptoms are abdominal or flank pain, loss of weight, and malaise. Since the tumors are usually malignant, metastases in the regional nodes, lungs, and liver are not unusual. The tumors can be outlined satisfactorily by perirenal insufflation according to the method of Cahill.[18] An unfortunate characteristic of nonhormonal tumors is that they grow extremely large before the diagnosis is made. At operation the problems are extensive blood loss, the circulatory depression associated with the removal of large intra-abdominal or retroperitoneal masses, and, occasionally, the anesthetic and surgical problems incident to operations within the pleural cavity. From an anesthetic standpoint, the essential principle is the provision of safe and adequate relaxation with minimum disturbance of other physiological activities. No anesthetic agent or method proved superior to another in our hands. In general, inhalation anesthesia with an endotracheal airway is preferred because of the greater flexibility of management of the problems described. Transfusion must be adequate and planned well in advance of the

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operative procedure. The ultimate outcome of patients with nonhormonal adrenal cortical tumors depends on the presence or subsequent development of metastases and not primarily on the anesthetic or surgical management immediately at operation.

The Adrenogenital Syndrome.—The adrenogenital syndrome usually results from hyperplasia of the adrenal cortex but may be associated with a cortical tumor. The presence of a tumor and the need to examine the pelvic reproductive organs directly for the establishment of the true sex of the pseudohermaphrodite are the chief indications for operation and anesthesia.

The adrenogenital syndrome may occur at any age, but is commonest in the female at birth. In the female the signs and symptoms are referable to masculinization. In the male the chief characteristics are precocious sexual and musculoskeletal development. Cortical tumors are most frequently found in the prepubescent years. The majority of patients with the adrenogenital syndrome pose no problems in anesthetic management. They withstand operation and anesthesia well, since the disease has no untoward influence on vital metabolic processes. There are two important exceptions to this generalization. First, an occasional patient with virilism may also have Addison's disease. Three such patients have been studied at the Presbyterian Hospital. The anesthetic and surgical problems in the presence of Addison's disease are grave, as indicated above, if specific treatment is inadequate or neglected. Therefore, all patients with the adrenogenital syndrome should be studied to uncover complicating Addison's disease, and appropriate therapy should be instituted.[19] Second, the patient with the adrenogenital syndrome may have a coexisting Cushing's syndrome. This syndrome presents serious problems that will be considered below.

Cushing's Syndrome.—In 1932 Cushing [20] described the syndrome that bears his name. The characteristic extensive metabolic derangements are hypertension, glycosuria, hyperglycemia, osteoporosis, and a peculiarly distributed painful obesity. These signs and symptoms sometimes occur in association with virilism. Although Cushing's original description referred to adenomatous change in the basophilic cells of the anterior pituitary as the etiological factor, adrenal cortical tumors are frequently associated with this syndrome. Despite considerable controversy as to the exact etiology of Cushing's syndrome, it is now generally accepted that certain adrenal cortical tumors may produce the characteristic disease pattern. The results of operative excision of adrenal cortical tumors responsible for the Cushing syndrome are extremely satisfactory. There is some disagreement as to the therapeutic efficacy of the resection of a single hyperplastic adrenal gland in the cure of Cushing's syndrome. The partial resection of both adrenals, however, is a much more difficult procedure technically and is quite unpredictable in terms of the extent of remaining adrenal cortical tissue. Resection also carries the risk of the production of Addison's disease, which must then be treated by substitution hormonal therapy.

In contrast to the surgical therapy of the uncomplicated adrenogenital syndrome, operative correction of Cushing's syndrome, in terms of either resection of a cortical tumor or an extensive resection of hyperplastic adrenals, is a serious risk to the patient. The incidence of severe postoperative shock following the resection of adrenal cortical tumors responsible for Cushing's syndrome is high. The mortality rate has been reported to vary from 39% [21] to almost 50%.[22] Of the six patients reported on by Soffer, three died shortly after the completion of the operation.[23] This high mortality occurred despite apparently adequate preoperative preparation with adrenal cortex extract and isotonic sodium chloride solution given intravenously. Death was probably the result of shock which, in turn, was associated with acute adrenal insufficiency. This type of adrenal insufficiency may result from acute lack of adrenal cortical factors other than the salt-retaining factors. These substances are as yet unidentified. Since death usually occurs within 48 hours of the time of operation, the evidence suggests that the classic Addisonian crisis with the loss of sodium chloride and fluids is not entirely, and perhaps not chiefly, responsible for the pattern of difficulty and ultimate death in the postoperative period. It is of some interest that in the experimental animal Kleinberg and his co-workers [24] have shown that postadrenalectomy shock can be prevented by thorough block of the adjacent sympathetic fibers with procaine hydrochloride prior to extirpation of the adrenals. A similar protection against collapse is afforded by spinal cord section at the first or second thoracic levels. The implication that there is an autonomic nervous system factor in the catastrophe following adrenal cortex resection in Cushing's syndrome needs further study. Another factor of great significance in the high mortality of Cushing's syndrome is that the contralateral adrenal gland is frequently atrophic. In contrast, patients with the adrenogenital syndrome rarely have controlateral atrophy of the adrenal glands.

Preparation for operation of patients with Cushing's syndrome, either with or without an adrenal cortical tumor, is extremely important. These patients are prepared with liberal doses of adrenal cortex extract and sodium chloride at least two days prior to operation. During the operative procedure dextrose and isotonic sodium chloride solutions are administered in addition to larger doses of whole adrenal cortex extract. The tempo of replacement therapy is increased to coincide in time with the actual removal of the tumor. In the postoperative period vigorous replacement therapy with adrenal hormones as well as sodium chloride is of great help. The development of serious hypotension after the

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removal of the tumor has been treated with varying degrees of success, not only by the intensification of specific hormone replacement but by intravenous drips of epinephrine or arterenol as well as whole blood and plasma transfusion. Replacement therapy with some of the newer steroids and hormones such as cortisone offers considerable promise. The results of cortisone therapy will be of interest as more data are accumulated.

Comparatively little has been learned about the most satisfactory type of preanesthetic sedation for these patients. Our practice in general has been to employ a narcotic such as morphine or meperidine hydrochloride and scopolamine hydrobromide in doses somewhat smaller than might ordinarily be used. The actual anesthetic agents and techniques are not clearly decided upon, since clinical experience is not extensive enough for evaluation. However, to facilitate the transperitoneal exposure found eminently satisfactory by one of us (G. F. C.) in tumor cases, the nitrous oxide-ether sequence through an endotracheal airway has been satisfactory. Great care is taken to avoid agents and methods that may regularly produce sudden hypotension, since this is a serious complication of the operative procedure in any event. Therefore, spinal anesthesia, despite its possible theoretical advantages of autonomic denervation, has not been employed. Basal anesthesia with tribromoethanol (avertin®) has been used either not at all or sparingly. Cyclopropane has not found particular favor, because of the frequent need for therapy of a hypotensive state with epinephrine or arterenol. Since these substances produce ventricular arrhythmias of a serious nature more commonly with cyclopropane than with ether, the former agent has been avoided. No experience has been acquired with the use of thiopental (pentothal®) sodium and nitrous oxide with oxygen or with the various curariform relaxing agents.

Combinations of the adrenogenital syndrome and the metabolic changes associated with Cushing's syndrome are possible. These situations are managed in the light of the more serious complications of Cushing's syndrome.

ADRENAL TUMORS OF MEDULLARY ORIGIN

Sympathogonioma and Neuroblastoma.—The sympathogoniomas and the neuroblastomas are derived from sympathetic nervous tissue. The former are usually highly malignant, occur in infancy, and grow to extremely large size. Surgical therapy is often unsuccessful. The surgical and anesthetic problems are those associated with massive resection of intra-abdominal tumors. The surgical exploration has been transabdominal. The single most important factor in operative management is replacement of blood in fairly large quantities. The neuroblastomas occur in children, are usually highly malignant, and present anesthetic and surgical problems similar to those of the sympathogoniomas.

Pheochromocytoma.—Tumors of adrenal medullary cells of chromaffin origin have been known since 1886.[25] However, the first correctly diagnosed and successfully removed tumor was reported in 1929.[26] Histologically, the vast majority of pheochromocytomas are benign, but functionally they are quite malignant, because of the excessive secretion of epinephrine and/or arterenol. Although the tumor is usually found in one of the adrenal glands, it may occur in the lumbar area in the region of the sympathetic chain, in the organs of Zuckerkandl, and, rarely, in the chest or brain. The outstanding clinical features have been summarized recently by Smithwick and his associates.[27] Hypertension, paroxysmal in 30% or continuous in 70%, is prominent. Hyperhidrosis is frequent and severe. Signs of peripheral vascular constriction during attacks are a constant finding. Objective findings are those associated with an elevated metabolic rate, high blood pressure, and a retroperitoneal tumor. There are many specific tests for the presence of pheochromocytoma. The most useful are the antagonistic piperoxan (benzodioxane®) hydrochloride test described by Goldenberg,[28] the cold pressor test, and the provocative tests, such as the histamine test.[29]

In a recent review of the literature [30] reports of 91 patients who had been operated on were studied. In the cases in which pheochromocytoma was suspected and proper preparation made, the mortality was 24%. In patients whose adrenal lesion was not suspected, a variety of operative procedures resulted in a mortality of 50%. Clearly therefore, unrelated surgical operations are a distinct hazard to the patient with pheochromocytoma.

Preoperative preparation of these patients is based on the need to correct as far as possible the hypersecretion of epinephrine or arterenol prior to the induction of anesthesia. An adrenolytic drug, N,N,-dibenyl-beta-chloroethylamine (dibenamine®), 5 mg. per kilogram of body weight, has been administered intravenously 24 hours before the scheduled time of induction of anesthesia.[31] This procedure is not without risk, because of a possible sustained hypotension. Premedication can be given according to accepted principles. Morphine or meperidine hydrochloride and scopolamine hydrobromide are usually chosen. The selection of anesthetic agents and methods has not in the past been given serious consideration. Data are not available in more than half of the reported cases. In the 41 cases in which anesthesia is mentioned, almost all known agents were used. The relationship between anesthesia and the results of operative treatment is impossible to evaluate from the evidence available.

Our own experience includes 12 operations on 10 patients with proved pheochromocytoma. Eight patients survived; 14 other patients were explored without the

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lesion being demonstrated. In the 12 operations in the proved cases, ether was administered to nine patients, cyclopropane to two, and thiopental sodium with nitrous oxide and oxygen to one. The two patients who died during operation received cyclopropane and ether respectively.

The problems in anesthetic management largely concern four important elements: The need for adequate relaxation, the possibility of accidental pneumothorax, the physiological effects of excessive secretion of epinephrine or arterenol during manipulation of the tumor, and the sudden circulatory depression that may occur after extirpation of the secreting mass. Relaxation can be secured in many ways. We have elected moderate depths of ether anesthesia as a reasonable approach. No ill-effects from the sympathomimetic action of ether have been noted. Curare has not been employed in this series. An endotracheal airway is regularly established to aid in the care of pneumothorax should it occur.

The problem of the physiological effects of excessive medullary secretion is more serious than those mentioned previously. No matter what anesthetic regimen is followed, anoxia must be avoided at all costs. Anoxia appears to be as potent a stimulus to medullary secretion as tumor manipulation. The potential causes of anoxia are many and well known. Agents which, in the presence of epinephrine, produce serious ventricular arrhythmias must also be avoided. Cyclopropane, chloroform, and ethyl chloride are therefore unwise choices, in our opinion, for these patients. Despite all precautions, including meticulous isolation of the adrenal from the systemic circulation, paroxysmal hypertension may ensue. Piperoxan hydrochloride (20 mg. or more) is used intravenously to combat this unusual hypertension. The marked hypotension and circulatory collapse following excision of the tumor is best controlled by the injection by intravenous drip of arterenol (4 mg. per liter).[31] The drip is usually given at a rate that will maintain a moderate hypertension. It is an essential therapeutic aid in the first three days of postoperative convalescence.

BILATERAL ADRENAL EXTIRPATION

Total or subtotal adrenalectomy has been considered and completed for reactivated carcinoma of the prostate by Huggins and Scott.[32] This operation has also been considered as a method of therapy for malignant hypertension in a small number of patients by Thorn [33] and Zintel.[34] In the latter instance the rationale is the elimination of unknown hypertensive factors of the adrenal gland. The procedure is thought possible because of the availability of adequate substitutive hormonal therapy (cortisone, desoxycorticosterone acetate and sodium chloride) to control the surgically induced Addisonian state.

Thorn, in an unpublished communication to one of us (G. F. C.), has summarized the preliminary results in total adrenalectomy on 12 patients with malignant hypertension and chronic nephritis.[33] There were four deaths. Six of the eight survivors were improved subjectively and objectively. Preoperative preparation consisted of a salt-free diet, diuretics, digitalization, and sedation. Cortisone (100 mg. intramuscularly) was given the night before operation and repeated in the morning prior to induction of anesthesia. During operation, which was performed in the prone position, 100 to 200 cc. of aqueous whole adrenal cortex extract and 20 to 50 mg. of phenylephrine (neo-synephrin®) hydrochloride were given by intravenous drip. Cortisone (50 mg. every six hours intramuscularly) was injected the first 48 hours postoperatively and gradually reduced to a daily maintenance dose of 37 to 25 mg. Later in convalescence, sodium chloride (3 gm.) was added to the diet with or without desoxycorticosterone acetate (1 mg. daily three to six times a week). Continuous spinal anesthesia was advocated as "safer," but intratracheally administered ether provided the best possible exposure.

Difficult as it is to predict the ultimate utility of adrenalectomy in the treatment of some disease states, evidently means are at hand in the form of hormonal replacement to make this type of surgery possible. Future experience is necessary before judgment can be passed on the wisdom of this kind of radical surgery as effective treatment for uncontrolled hypertension.

SUMMARY

The surgical and anesthetic problems incident to the operative treatment of patients with disorders of the adrenal gland are reviewed. The conditions considered are lesions producing hypofunction and hyperfunction of he adrenal cortex, hypersecretion of the adrenal medulla, and complete absence of adrenal activity.

The vital importance of replacement therapy in patients with hypofunction of the adrenal cortex prior to operation is demonstrated. This principle can be extended to those clinical situations in which hypofunction can be expected in the postoperative period (Cushing's syndrome and bilateral adrenalectomy). The value of aerograms for the localization of adrenal tumors is pointed out. The utility of electrolyte studies and the exploitation of autonomic drugs in the diagnosis of adrenal lesions is described.

Emphasis is placed on the avoidance of anesthetic agents and techniques that may regularly precipitate circulatory depression or are associated with the dangers of anoxia or asphyxia. Meticulous anesthetic management is considered of prime importance and the specific agents and techniques secondary. The uses of adrenal cortical extract, sodium chloride, autonomic blocking agents, and sympathomimetic pressor agents are described in the light of the physiological disturbances produced by the adrenal lesions under consideration. The factors pertaining to hormonal and drug therapy after operation in the various adrenal disorders are presented.

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ANESTHESIA IN PEDIATRIC UROLOGY

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During the past two decades, significant advances have been made in pediatric urology. While many difficulties have been resolved, the problem of a satisfactory and optimum anesthetic management still remains a challenge to some. Thus, published reports on uropediatric anesthesia are meager, limited to a few pediatric centers, and controversial in many respects.[1] In an attempt to clarify this problem, an analysis was made of the pertinent literature and the clinical experiences in the anesthetic management for pediatric urology.

A survey of the progress in anesthesia is of paramount importance to the urologist interested in pediatrics. It reveals several fundamental facts inadequately stressed and not fully appreciated clinically. To begin with, there is no ideal anesthetic agent and/or technique per se. All have their advantages, disadvantages, limitations, contraindications, and complications. Accordingly, for safe and optimum anesthesia, the anesthetic management for each operative procedure must be individualized. Secondly, there is no anesthesia that is singularly specific for uropediatric cases alone. A properly selected anesthetic management can be optimum for surgery other than urology. Lastly, from the anesthetist's point of view, the requirements of the urologist for his pediatric patient do not differ materially from those of other surgeons concerned with children. Thus, at one time or another, all surgeons desire for their younger patients analgesia, amnesia, or unconsciousness with muscular relaxation, control of adverse reflexes, and timely, adequate prophylaxis or therapeusis for anesthetic complications during surgery and the recovery period.

FUNDAMENTAL CONSIDERATIONS

It may be asked, logically, what has occurred during the past decade to facilitate the anesthesia in pediatric urology? Without question, the development of pediatric anesthesia, a specialty within a specialty, has contributed more to the safety and to the rational approach to anesthetic problems in the child than any other advance in anesthesia. The pioneer work of Ayres,[2] Leigh and Belton,[3] Stephen and Slater,[4] Robson,[5] and others,[6] in correlating the anatomy and physiology of the child and the anesthetic armamentarium of the anesthesiologist with the requirements of special surgical procedures, is now well established. Few facts are of particular significance. Too much emphasis cannot be given to the physiology of the central nervous system from infancy to late childhood. During this age period, there is an alarming susceptibility to hypoxia and asphyxia, an ever-changing and maturing pattern of pain perception and response, frequent unpredictable effects of hypnotic, analgesic, and analeptic agents, and last and of recent significance, the unappreciated psychic trauma that may result from terrifying operating room experiences.[8] Similarly, the respiratory system in the infant-to-childhood group is anatomically and physiologically different from that of the adult. While the pulmonary alveolar absorption surface area is greater in the younger group, the oxygen consumption per kilogram body weight per minute is also greater, being almost twice that of the adult. Therefore, the oxygen requirements of the child are correspondingly higher. The smaller glottic opening and diameter of the trachea are more conducive to obstruction from mucous, blood, and foreign bodies. In infants, the respiratory center is undeveloped, unstable, and quite sensitive to variations in O_2 and CO_2 in the bloodstream and to somatic and visceral stimuli occurring normally or during surgery. Thus, changes in the rate, tidal air, rhythm, and minute volume of respiration are common and are conducive to serious disturbances in gaseous exchange. The ill-effects of increased dead space and/or increased resistance to respiration caused by improper anesthetic equipment frequently are overlooked in pediatric anesthesia. The cardiovascular system in the infant-child group similarly shows variations of interest to the surgeon and anesthesiologist. The blood volume, blood velocity, cardiac output, pulse rate, and circulation time decrease as age progresses, while the blood pressure increases. Cardiovascular compensatory mechanisms are better developed in the older child and are more predictable in their response to anesthetic and surgical reflex stimulation. Metabolic requirements are more precise the younger the child, making pre- and post-operative care of extreme importance. In short, the vital systems of the infant and the child are subject to more variations and imbalance than those of the adult. Accordingly, they possess a narrower margin of safety and do not tolerate anesthesia or surgery as well. Both the surgery and anesthetic management must be especially well executed for optimum results. As Campbell [1a] has said, "the anesthetic should be administered by an expert anesthesiologist wherever possible."

From St. Francis Hospital.

Read in the Symposium on Preoperative Preparation, Anesthesia and Supportive Therapy for Urologic Operations before the Joint Meeting of the Sections on Anesthesiology and Urology, at the One Hundredth Annual Session of the American Medical Association, June 15, 1951.

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ANESTHETIC MANAGEMENT

Modern anesthetic management consists of three phases: (1) preoperative evaluation, (2) anesthetic administration, and (3) postanesthetic care of the patient. The preoperative evaluation of the child, as in the case of the adult, begins the afternoon preceding surgery. This is particularly significant in pediatric cases not only because of the poor tolerance of anesthetic and surgical procedures but also because of the child's all too common fearful reaction to strange surroundings, hospital personnel, and routine. A kindly, sympathetic approach during the preoperative visit will minimize, if not eliminate, such apprehension. The child, seeing the same physician-anesthetist in the operating room, becomes more complacent and cooperative.

Several other features characterize the preoperative visit of the anesthesiologist. The physical status of the patient is ascertained from (1) the history—that of the chief complaint, previous illnesses, birth injuries, convulsive episodes, and similar data, from (2) the physical examination—the actual versus the physical age, normal versus actual weight, the presence of congenital defects, and the existence of dehydration, jaundice, edema, or other complications, and from (3) all laboratory data and x-ray studies. The detailed preparation of the patient the evening before surgery is then considered. It is customary for the urologist to prescribe the "surgical prep," enemas, omission of breakfast, and similar measures, while the anesthesiologist orders the hypnotic agent (elixir of phenobarbital, secobarbital [seconal®], or pentobarbital [nembutal®] in proper dosage), if necessary, to insure a restful sleep, and the preanesthetic medication. The literature reveals many preferences for preanesthetic medication. Campbell has favored phenobarbital, paregoric, morphine, or codeine sulfate in proper dosage.[1] The use of rectal tribromoethanol (avertin®) fluid [9] and intravenous hexobarbital (evipal®)[1] has also been mentioned. Schotz,[10] Weinstein and Light,[11] Burnap, Gain, and Watts,[12] and Mark, Fox and Burstein,[13] emphasize the advantages of rectal thiopental (pentothal®) sodium over the use of tribromoethanol fluid. Poe and Karp [14] feel that secobarbital administered rectally provides ideal basal anesthesia and should be employed for all children not amenable to reason or otherwise difficult to handle. In a comprehensive study by Leigh and Belton,[3] most of the commonly employed agents are discussed, with emphasis on the rationale of premedication, pharmacology of the agent, and the reasons for various preferences. For optimum premedication based mainly on weight and physical condition rather than on age,[15] they prefer secobarbital the night before surgery, morphine and scopolamine hydrobromide one hour before general anesthesia; or morphine, scopolamine, and secobarbital or pentobarbital one and one-half hours before regional anesthesia. Their elaborate table of dosages begins from birth and extends to 15 years of age.

The preanesthetic medication found most satisfactory, providing a depression just short of sleep, is that based on the patient's physical status (age, weight, and degree of mental excitability), the anesthetic management to be employed, and the surgery to be performed. The drugs and their dosage that are recommended are listed in the Table. With the variables to be considered, this is admittedly more a matter of experience and clinical judgment rather than of routine. Opiates are prescribed only when there is actual preanesthetic pain and never in infants less than 6 months of age. Hypnotics, such as pentobarbital or secobarbital, are favored in the absence of pain. To decrease secretions in the respiratory tract and to counteract adverse parasympathomimetic reflexes and, to a less extent, respiratory depression, scopolamine or atropine is added to the opiate or hypnotic agent. The latter two are given in slightly greater dosage if the child is unusually apprehensive, irritable, or if regional rather than general anesthesia is to be employed. On the contrary, the dosage of the opiate, hypnotic, and parasympatholytic agents should be decreased 25 to 50% for administration to underweight, chronically ill, or mentally depressed children.

*Dosage for Preanesthetic Medication in Children**

(Modification of Leigh and Belton [3])

Age	Weight in Lb.	Opiate: Morphine Grain	Opiate: Morphine Mg.	Opiate: Demerol® Mg.	Hypnotic: Nembutal® Grains	Hypnotic: Secobarbital Mg.	Parasympatholytic: Scopolamine Grain	Parasympatholytic: Scopolamine Mg.	Parasympatholytic: Atropine Grain	Parasympatholytic: Atropine Mg.
0-6 mo.	6-16	1/144	0.4	..	..	..	.....	...	1/450	0.1
6-12 mo.	16-21	1/144	0.4	7	¼	16	.....	...	1/450	0.1
1-2 yr.	21-28	1/96	0.6	10	⅜	24	1/600	0.1	1/400	0.16
2-3 yr.	28-31	1/48	1.0	13	½	32	1/450	0.14	1/350	0.19
3-6 yr.	31-45	1/36	1.4	20	⅝	48	1/450	0.14	1/300	0.22
6-9 yr.	45-60	1/24	1.8	37	¾	48	1/300	0.22	1/250	0.28
9-12 yr.	60-85	1/24	2.7	50	1	60	1/250	0.29	1/200	0.33
12-14 yr.	85-105	1/12	5.4	75	1½	90	1/200	0.33	1/150	0.5

* The doses as expressed in grains and milligrams are only approximate equivalents.

9. Bourne, W.: Avertin Anesthesia for Crippled Children, Canad. M. A. J. **35**: 278, 1936.

10. Schotz, S.: Rectal Pentothal for Basal Narcosis in Infants: Report of Three Cases, Current Res. in Anesth. & Analg. **21**: 295, 1942.

11. Weinstein, M. L., and Light, G. A.: Rectal Sodium Pentothal in 2,500 Anesthesias, Current Res. in Anesth. & Analg. **27**: 343, 1948.

12. Burnap, R. W.; Gain, E. A., and Watts, E. H.: Basal Anaesthesia in Children Using Sodium Pentothal by Rectum, Anesthesiology **9**: 524, 1948.

13. Mark, L. C.; Fox, J. L., and Burstein, C. L.: Preanesthetic Hypnosis with Rectal Pentothal in Children, Anesthesiology **10**: 401, 1949.

14. Poe, M. F., and Karp, M.: Seconal as a Basal Anesthetic for Children, Current Res. in Anesth. & Analg. **27**: 88, 1948.

15. Cullen, S. C.: Anesthesia in General Practice, Chicago, The Yearbook Publishers, Inc., 1946.

The final phase of the preoperative evaluation is concerned with the selection of the optimum anesthetic agent and technique. This must always be an individualized procedure based fundamentally on the patient's physical status and the urologic procedure to be performed. The requests of the urologist and of the patient (if made) are considered and carried out if there are no contraindications or if they do not significantly alter what is considered the optimum anesthetic management.

It has been our experience that urologic procedures in children are best performed under general rather than under regional anesthesia, particularly when the children are under 6 years of age. In all types of general anesthesia, the inhalation and intravenous routes are preferred. Children are naturally inquisitive, alert, and apprehensive. Under regional anesthesia, these attributes are magnified, and children become uncooperative, excitable, or combative unless excessively premedicated. In such circumstances, they do not tolerate anesthesia well. Thus, regional anesthesia is employed only when there are contraindications to the use of general anesthetic agents.

There appears to be no doubt that the most popular and still the safest inhalation agent is ether. It is used following ethyl chloride or preferably vinyl ether (vinethene®) induction with an open mask in infants and younger children or in older ones following a nitrous-oxide-oxygen induction in a closed system. Ether anesthesia is highly recommended for those urologic procedures that must be done without the aid of a physician-anesthetist. In institutions where a competent anesthesiologist is available, nitrous-oxide-oxygen, ethylene, trichlorethylene, cyclopropane, curare, or sodium pentothal with nitrous-oxide-oxygen can also be employed, depending on the presence of contraindications.[16] The authors have favored particularly the use of vinyl ether, cyclopropane, or thiopental sodium and nitrous-oxide-oxygen. Thiopental sodium (1 to 1.25%) with N_2O-O_2 (50:50) is reserved for cystoscopic procedures since this technique provides a quick induction and emergence and eliminates the explosive hazard while x-rays are being taken. Intravenous anesthesia, particularly in cystoscopic and transurethral procedures, in the young is encouraged by other groups.[1b]

It is not an uncommon experience to find one agent optimum for a procedure and another anesthesia considered equally so for the same procedure on the same or subsequent day owing to changes in the physical status of a child. It must be emphasized again that the selection of the anesthetic agent and technique is always individualized for each procedure and patient for optimum results. In all general anesthesias with the patient in the "kidney position," the use of the endotracheal tube with the Ayres or closed system techniques is highly recommended. This provides added ease and safety in the control of ventilation and depth of anesthesia. The following cases are presented to illustrate variations in anesthetic management.

REPORT OF CASES

CASE 1.—A Negro boy, aged 6 years, was admitted to the urologic service on Nov. 11, 1949, because of a diagnosis of bilateral hydronephrosis, malnutrition, marked anemia, and chronic tonsillitis. At 2 years of age, he had bilateral nephrostomies performed at another hospital. The following procedures were carried out during the next four months:

Nov. 20, 1949	Right ureteroneocystostomy and partial resection of the ureter	
	Premedication:	pentobarbital ¾ grain one and one-half hours before surgery and atropine 1/200 grain one-half hour before surgery
	Anesthesia:	vinethene® induction, ether endotracheal to and fro system
Nov. 21, 1949	Cystoscopy	
	Same premedication	
	Anesthesia:	thiopental sodium (1.25%—6 cc.); nitrous-oxide-oxygen (50:50)
Dec. 2, 1949	Nephrostomy on right side:	
	Same premedication and anesthesia as on Nov. 20, 1949	
Jan. 3, 1950	Left Ureteroneocystostomy—Ureterotomy	
	Premedication:	secobarbital ½ grain and atropine 1/200 grain one hour before surgery
	Anesthesia:	Cyclopropane endotracheal to and fro anesthesia
Feb. 8, 1950	Cystoscopy	
	Same premedication and anesthesia as on Nov. 21, 1949	
Feb. 17, 1950	Insertion of Ureteral Catheter	
	Premedication:	atropine 1/200 grain one hour before surgery
	Anesthesia:	cyclopropane
Mar. 14, 1950	Tonsillectomy and Appendectomy	
	Premedication:	pentobarbital ½ grain and atropine 1/200 grain one hour before surgery
	Anesthesia:	cyclopropane endotracheal to and fro anesthesia

On March 22, 1950, the patient was discharged.

CASE 2.—A white male infant, 13 months old, was seen in consultation on May 5, 1951, by the urology department because of a complaint of abdominal swelling. Physical examination suggested the possibility of a Wilms tumor on the right side. The following procedures were carried out:

May 5, 1951	10:30 a. m.	Cystoscopy and Retrograde Pylorgram
	Premedication:	atropine 1/400 grain 30 minutes before surgery
	Anesthesia:	Thiopental sodium (1.25%-5 cc.); nitrous-oxide-oxygen (50:50)
	8:30 p. m.	Removal of Wilms Tumor, right side
	Premedication:	1/400 grain atropine 30 minutes before surgery
	Anesthesia:	Open drop vinethene® induction; ether insufflation thru endotracheal tube (Ayre technique)

On May 18, 1951, the patient was discharged (remaining on radiation therapy as outpatient). He has been in a satisfactory condition since then.

COMMENT

Many regional anesthetic techniques have been found useful in pediatric urology.[1a,b] They have been popularized in the past by various pediatric centers. Today, such procedures are less commonly employed and, as stated previously, are decidedly of second choice to us. For procedures such as circumcisions, meatotomy, or correction of hypospadias, local infiltration with 5 to 30 cc. of a 0.2 to 0.5% procaine hydrochloride solution has been found useful. Urethral instillations with 2 to 4 cc.

16. Leigh and Belton.[5a] Stephen and Slater.[6a] Stephen, C. R., and Slater, H. M.: Newer Anaesthetic Agents in Children with Special Reference to Trichlorethylene and Kemithal, Anesthesiology **12**: 135, 1951.

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of a 2% procaine hydrochloride, 2 cc. of a 4% piperocaine (metycaine®) hydrochloride, or 6 cc. of diperodon (diothane®) solution for cystoscopy and retrograde pyelogram can be employed. For more extensive procedures, (suprapubic cystoscopy, nephrostomy, nephrectomy, and others), a paravertebral block with 1% procaine hydrochloride at 5 to 6 levels has been recommended. Campbell has reported 92% success in a series of 158 boys 4 years or older,[1] and 80% success in a series of 1,000 children,[17] using caudal or sacral block with 8 to 12 cc. of a 2% solution of procaine hydrochloride for cystoscopy or transurethral surgical treatment of posterior canal and bladder outlet. While no difficulties or complications were mentioned, Campbell emphasizes that "the majority of urologic operations in infants and children must be performed under general anesthesia," and that "as a rule, in children, a urologic operation which cannot be completed in 90 minutes should be done in multiple stages." These statements may be regarded as axiomatic today in view of the limited duration of the classic caudal block, its possible psychic trauma, and the greater appreciation of the child's limited tolerance to surgery as well as to anesthesia. Spinal anesthesia in children for major urology with 20 to 30 mg. of procaine hydrochloride in 1 cc. has also been suggested.[18] While this procedure offers the advantages of a regional technique with optimum muscular relaxation and minimal cerebral depression, it is believed that the possible psychic and somatic (cord) trauma, potential circulatory and respiratory disturbances, and limited duration do not justify the use of this method unless all types of general anesthesia are contraindicated. It is accordingly not commonly employed in children, particularly under 6 years of age.

Whatever anesthetic agent and technique are employed, the anesthesiologist must keep a constant vigil of the vital systems of the body. By recording blood pressure, pulse and respiratory rates, the depth and duration of anesthesia, the approximate blood loss during the progress of surgery and, in some instances, the rectal temperature, he becomes invaluable in instituting prophylactic or therapeutic measures to counteract aberrant reflexes or adverse changes in the vital systems of the body. No time need be lost to correct respiratory disturbances such as obstruction, cyanosis, hypoventilation, or apnoea, or cardiovascular changes such as vascular depression, peripheral vascular collapse, cardiac arrhythmia, or standstill. With a patent vein, fluid therapy as indicated, consisting of isotonic saline or dextrose, Hartmann's solution or whole blood, can be carefully administered. The trained anesthetist will lighten the general anesthesia as the surgeon completes his procedure so that the child will either be awake or will at least have active swallowing, gag, and cough reflexes. Finally, in conjunction with the surgeon, he will write postoperative orders to include (1) an analgesic to be administered every three or four hours, as needed, and when the patient is awake and actually in pain; (2) fluids as indicated; (3) oxygen by tent, mask, or nasal route; (4) antibiotics; and (5) bladder drainage and other procedures.

The anesthetic management logically concludes with prophylactic and therapeutic measures during the postoperative interval against complications due to anesthesia. Such interval begins with the emergence from anesthesia, requiring often several hours and extends for several days during the latent recovery period. Children should be particularly watched during emergence from anesthesia for (1) hypoventilation, (2) respiratory obstruction with asphyxia, cyanosis or dyspnoea from poor positioning in bed, excess secretions or sluggish return of swallowing and gag reflexes, (3) nausea, vomiting, and possible aspiration, (4) excessive excitement or convulsions, or (5) vascular depression and peripheral vascular collapse. The younger the child, the more meticulous the care be given during the critical emergence from anesthesia. In the latent recovery period, adequate measures should be taken by the urologist and his anesthetist to prevent or treat pulmonary atelectasis, pneumonia, abdominal distention, anuria, and other possible complications. Early ambulation and oral feedings, when possible, appear to be even more effective in facilitating convalescence in the child than in the adult. The interdependence, close cooperation, and mutual respect of the urologist and his anesthesiologist must be at their peak to make the practice of pediatric urology modern, safe, and sound.

SUMMARY

A satisfactory and optimum anesthetic management has been a major consideration in the progress of urologic surgery in children. An attempt was made in this presentation to correlate pertinent anesthetic and physiological factors in children and the requirements of urologic surgical techniques with the modern day concepts of anesthetic management. An evaluation of general and regional anesthesia is presented, based on published reports and personal clinical experiences. Recommendations for an optimum anesthetic management for various types of urologic surgery in children are emphasized.

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17. Campbell, M. F.: Caudal Anesthesia in Children, J. Urol. 30: 245, 1933.
18. Campbell,[1a] Leigh and Belton.[2a]

Growth of Urban Population.—For at least a century the urban population of the United States has been growing more rapidly than the rural. . . . The Census of 1920 was the first to show urban residents in the majority, but only by a slender margin of 51 per cent of the total population. By 1950, the proportion in urban areas had increased to 59 per cent; a century ago it was only 15 per cent. Migration from our farms and from foreign countries has kept our cities well supplied with people. Even in the second half of the last century, while there was a wide-spread movement to farms in the West and Midwest, the population in urban areas grew at a rate three times that in rural areas; in the present century the increase has been four times as fast. The population in our larger cities has shown the most rapid rate of growth. . . . The proportion of our population in cities with 100,000 or more has grown from 5 per cent in 1850 to 19 per cent in 1900. Since then, internal migration as well as the continuing stream of immigrants from abroad have brought the proportion of the total population in such cities to 29 per cent. Meanwhile, the number of cities with 100,000 or more inhabitants rose from 6 in 1850 to 106 at present.—Rapid Growth of Urban Population, *Statistical Bulletin, Metropolitan Life Insurance Company*, September, 1951.

PREOPERATIVE AND POSTOPERATIVE CARE OF AGED PATIENTS UNDERGOING UROLOGICAL SURGERY

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Largely on account of the fact that prostatic obstruction occurs mostly in elderly persons, there is a higher percentage of aged patients encountered in urological surgery than in any other branch. Furthermore, this percentage is rising, since census and insurance figures show a constantly greater life expectancy and an increasing number of old persons.

In considering the matter of age the chronological age in years does not always give an accurate picture of the physiological age, since some men are old at 55 while others are young at 70. We have all seen this. The lean, spry, pink-cheeked man of 70 plus will tolerate surgery better than the obese, flabby, pasty-faced man of sedentary habits who is only 60.

Aged patients undergoing surgery present a special problem. Their ability to maintain the physiological balance of their bodily processes when subjected to stresses, such as malnutrition, electrolyte imbalance, trauma, or surgery, is considerably less than that of younger persons, so they have a narrower margin of physiological safety, and their condition is subject to rapid deterioration. Also their return to normal after weathering conditions of stress is slower, as are their processes of bodily repair after trauma or surgery.

Despite these handicaps, actually the aged nowadays withstand major surgery surprisingly well. This is due largely, I am sure, to careful pre- and postoperative care, to modern methods of therapy, to improvement in anesthesia, and especially—in my opinion—to the liberal use of whole blood.

Frequently added to the handicap of age is the additional deterioration of physical condition brought about by chronic disease or malnutrition and their sequelae. Since these have a direct bearing on the ability of these patients to withstand major surgical procedures, it is important not only to recognize them, but also to remedy them as far as possible before operation—and also to continue to treat them after operation and during convalescence. Arteriosclerosis is present in all these patients, and cardiovascular and chronic pulmonary pathological conditions are commonly found; but, since discussion of these conditions does not fall within the scope of this paper, suffice it to say that they should be carefully investigated and treated according to the indications.

Urological patients, especially those with chronic prostatic obstruction, are often suffering from lowered renal function and sometimes from resulting azotemia. These abnormalities—when present—make these patients poor risks for urological surgery. Fortunately, when secondary to prostatic obstruction, they usually can be largely corrected by free urinary drainage, thus greatly improving the ability of these patients to withstand surgery. Therefore, it is important to determine renal function and also to what degree uremia exists.

Although renal function can probably best be determined by a urine concentration test or by the urinary excretion of phenolsulfonphthalein injected intravenously, these tests are seldom necessary now that intravenous urography has become routine in the study of most urological patients. The speed with which the dye injected for intravenous urography is excreted, as revealed by the x-rays, and also the concentration in which it is excreted give a very good idea of renal function, and these tests have largely supplanted the other tests of renal function. However, if one is in doubt, the urine concentration test or the phenolsulfonphthalein excretion test may be used, but they are seldom necessary if the kidneys show satisfactory excretion of the dye used for urography. Also if a single specimen of urine reveals a specific gravity as high as 1.025, that constitutes a satisfactory urine concentration test.

In performing a phenolsulfonphthalein excretion test on an elderly male urological patient, one must remember that he may have several ounces of residual urine constantly in the bladder due to prostatic obstruction. Under this circumstance the urine at each voiding is a sample of the pool of residual urine in the bladder rather than only the urine excreted by the kidneys in the preceding half-hour or hour—a circumstance which will interfere with the accuracy of the test. Therefore, if the performance of the test is deemed important the amount of residual urine should be determined, and, if much is present, constant catheter drainage should be done during the test.

As previously mentioned, it is important to determine whether azotemia is present—and if so—to what degree. This is best done by determination of the urea nitrogen or the nonprotein nitrogen of the blood, which will reveal if there is nitrogen retention.

If decreased renal function and nitrogen retention are present in cases of obstruction in the urinary tract, particularly prostatic obstruction, there is a very good chance of improvement and return—at least partially—to normal in this regard by use of liberal fluid intake combined with free and prolonged urinary drainage. In prostatic cases urinary drainage takes the form of bladder drainage by catheter or suprapubic tube and in cases of obstruction of the kidney by ureterostomy, pyelostomy, or nephrostomy. This program, which may last from one week to much longer, is carried out until the previously mentioned tests for renal function and azotemia reveal progress well in the direction of normal function. There should be a considerable intake of fluids—at least 3,000 cc. per 24 hours. A urinary output of 1,000 cc. or more usually indicates satisfactory fluid balance. By these means in many elderly patients renal function is improved and nitrogen retention decreased sufficiently to allow them to undergo urological surgery successfully.

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Aged persons not infrequently show the effects of chronic malnutrition which—added to the handicap of their age and to any chronic disease which they may have of the cardiovascular, respiratory, renal, or other systems—markedly reduces their ability to withstand urological—or any other—surgery. Sometimes this malnutrition is due to poverty, but often it is due to lack of appetite, apathy, or ignorance of the proper diet and its importance. In addition, personal likes and dislikes of certain foods often play a part. Also not infrequently defective or absent teeth or poorly fitting artificial dentures prevent patients from taking foods requiring much chewing—meat in particular. Failure to eat meat is especially undesirable in view of the fact that protein foods, especially meat, in addition to furnishing a lot of the vitamin B complex and minerals to the diet play a major role in maintaining plasma proteins, which is particularly important during disease, wound healing, and convalescence. Under conditions of trauma, infection, and fever and after operations the breakdown of protein tissue is excessive and may be two or three times the normal. If at the same time there is an inadequate dietary intake of protein, a lowered serum protein will result. This protein depletion is commonly accompanied by edema and by anemia. In addition, weight loss occurs, and with it reduction of blood volume. Patients in such condition tolerate surgery poorly, are vulnerable to shock, and have a difficult convalescence. Also, it is difficult to maintain fluid and electrolyte balance in the presence of diminished plasma protein. Another phase of malnutrition is vitamin deficiency. Probably the most important vitamin for the aged is vitamin B complex—and also ascorbic acid in view of its known effect on the healing of wounds.

These various nutritional deficiencies—low plasma protein, anemia, edema, reduction in blood volume, loss of weight, and avitaminosis—should be corrected as much as possible, and at least brought out of the acute stage, before operation, unless an acute emergency exists, and should also be treated after operation and during convalescence. Vitamin deficiencies can be remedied by the administration of large amounts of all the vitamins, especially vitamin B complex and ascorbic acid (orally if possible, but if not, parenterally). Plasma protein can slowly be raised by the administration of a high protein diet orally. However, it may be impossible for the patient to take in his diet the desired 100 gm. of protein daily (which can be visualized as the amount contained in 4 fillets of beef or 3½ qt. [3,500 cc.] of milk or 17 eggs), and the desired amount can probably more readily be got into the patient orally by supplementary feeding with one of the commercial protein hydrolysates, which are usually also fortified with vitamins, minerals, and carbohydrates. This procedure may be all right when there is no hurry or during convalescence after an operation, but usually when a patient is being prepared for surgery time is of the essence, so that the more rapid raising of the plasma protein by parenteral injection is resorted to. Transfusions of whole blood raise not only the serum protein but also the hemoglobin and blood volume, as well as supplying minerals, potassium, and vitamins. In almost all instances this is undoubtedly the therapy of choice in my opinion. Blood plasma is expensive, does not contain the red cells and other beneficial qualities of whole blood, and is no longer used much in this connection.

Since proteins are absorbed into the body as amino acids, intravenous administration of amino acid mixtures (which are available commercially and also relatively inexpensive) is an excellent way of bolstering the plasma protein, either preoperatively or postoperatively. Goodly amounts of water should be administered with the amino acids to assist their synthesis into protoplasm, and dextrose should be added to aid in their utilization and to spare them for tissue building.

The level of prothrombin in the plasma may be decreased in cases of severe malnutrition with vitamin K deficiency, creating a tendency to abnormal bleeding. The prothrombin time should always be checked in elderly persons before operation. If it is deficient, this can be remedied by the administration of vitamin K.

The psysiological processes involved in dehydration, acidosis and alkalosis, and depletion of body electrolytes are inter-related and are very complex. Their management may play a very important part in the preoperative and postoperative course of elderly patients. The limited time permitted for delivery of this paper allows for only the briefest, oversimplified presentation of these processes.

Dehydration may occur from the failure to restore by ingesting fluid the normal water loss of the body from the lungs, skin, and kidneys. This may be due to nausea, dysphagia, weakness, or impairment of mental status. Dehydration occurs more commonly and more rapidly from the failure to restore abnormal and excessive water loss due to fever, perspiration, and vomiting (as is sometimes seen in acute pyelonephritis), to vomiting from other causes, or to severe diarrhea. Along with the body fluids, electrolytes are lost, notably sodium chloride and potassium. As dehydration progresses renal function is impaired with retention of acid catabolites, which results in acidosis and a decreased carbon dioxide content of the serum. The blood volume decreases with a rise in hematocrit reading. Clinically the patient presents the picture of weight loss, thirst, dryness of tongue and skin, and a scanty output of concentrated urine. If there is acidosis of considerable degree, hyperpnea or hyperventilation will occur, and the patient may be drowsy, apathetic, and confused.

Sodium is the main alkaline or basic constituent of blood plasma, whereas, chloride is the main acid constituent, and acidosis occurs when there is loss of sodium (base) out of proportion to the loss of chloride (acid). Acidosis is likely to follow a case of serious diarrhea, since there is a greater loss in diarrheal stools of sodium and other bases than there is of chloride and other acids. Now isotonic sodium chloride solution has one and one-half times as much chloride as has plasma, and therefore its administration in case of dehydration with acidosis would raise the level of the already predominating acid chloride and thus make the acidosis worse. However, it has been found that the intravenous administration of 1 part of 1/7 molar sodium bicarbonate solution in 2 parts of 5% dextrose in isotonic sodium chloride

solution decreases the chloride and tends to correct the acidosis and dehydration. One-seventh molar sodium lactate solution is just as good as the 1/7 molar sodium bicarbonate solution.

In cases of dehydration due to vomiting the situation is reversed, and there is a greater loss of acid chloride from the stomach than there is of basic sodium, with a resulting tendency to alkalosis. This can be detected by lowered serum chloride and increased carbon dioxide content of the serum. In this condition the intravenous administration of isotonic sodium chloride solution, with 5% dextrose solution to help bodily maintenance requirements, increases the diminished chloride back toward normal. Care must be taken not to carry the administration of isotonic sodium chloride solution too far; the daily sodium chloride need of an adult is satisfied by 700 cc. or less of sodium chloride solution, and the administration of an excess may result in fluid retention and a urine output which is extremely small relative to the amount of fluid intake. Thus it can be seen that it is important to recognize the difference between dehydration with acidosis and dehydration with alkalosis, since the treatment is different.

It is obvious that renal function is very important in these processes. Normally functioning kidneys are able to conserve the sodium, chloride, and bicarbonate of the body in balance under usual circumstances, but in cases of renal disease when the kidneys cannot conserve sodium and chloride, these may become depleted. And in cases of renal disturbances in which there is loss of the mechanism for conserving base or in which there is retention of the mineral acids (phosphate and sulfate), acidosis, as already described, may occur.

In the treatment of cases of dehydration with acidosis or alkalosis and of changes in, or depletion of the electrolytes, laboratory studies are essential unless the treatment is to be "hit or miss"—and very possibly "miss." Estimations of the serum chloride, carbon dioxide content of the plasma, hemoglobin and hematocrit reading, and nonprotein nitrogen and serum protein are guideposts without which the proper treatment is difficult.

Unlike sodium, which constitutes most of the basic factor in extracellular fluid (blood and interstitial fluid), there is very little potassium in the extracellular fluid, although it forms the chief basic constituent of cell fluid. Therefore, measurement of the potassium in extracellular fluid, as blood, does not necessarily reflect accurately the status of the majority of the potassium which is in the cells. Both hypopotassemia and hyperpotassemia produce a characteristic abnormality on the electrocardiogram, which may thus be used as a diagnostic aid in cases of these conditions.

It has been found that potassium depletion occurs under the conditions of dehydration, salt depletion, and acidosis just described and also in association with protein catabolism and after surgery when patients are taking little by mouth and are receiving potassium-free parenteral fluids. Therefore, in such cases it is deemed important to administer supplementary parenteral potassium in the form of special potassium salts which are added to the intravenous fluids the patient is receiving.

Since it is difficult for parenteral fluids to supply all the various minerals, such as magnesium and phosphate, lost by these depleted patients which are essential to normal intracellular metabolism, it is important to give as much oral feeding as possible as soon as this can be accomplished without nausea or diarrhea. In those patients who will not or cannot ingest nourishment, often a small rubber or polyvinyl tube is passed through the nostril into the stomach, fixed in position by adhesive taping to the nose and cheek, and used for frequent feedings of protein hydrolysates or dietary mixtures high in calories, protein, carbohydrate, fat, vitamins, and minerals, such as calcium, phosphorus and iron. For example, the so-called McLean feeding contains all those elements and supplies 1,850 calories in 1,500 cc. of fluid. Recently, in patients who have not been able to take nourishment by stomach and in whom it was therefore necessary to maintain nutritional status chiefly by parenteral routes, intravenous administration of emulsions of fats to supply calories and spare protein has been tried and successful results reported.

The choice of an anesthetic is not within the province of this paper, and also in this Joint Meeting with the Section on Anesthesiology I would not dare to do anything but keep a discreet silence. However, no matter what anesthetic is used, the patient should be kept well oxygenated during the procedure. The surgeon and the anesthetist should cooperate in using blood transfusions liberally in order to keep well ahead of blood loss and thus try to prevent the patient ever suffering shock. Uncompensated blood loss and inadequate oxygenation may lead to hypotension and shock, which are tolerated poorly by aged patients and may lead to thrombosis and infarction or embolism.

As for the surgery itself, the elderly are particularly intolerant of trauma, and the surgery should be done as atraumatically and expeditiously as possible. Since the tissues may be sluggish in healing, suturing should be careful and thorough, and skin sutures should not be removed too early.

In the immediate postoperative period supportive therapy, especially blood and oxygen, should be more than adequate. The same factors which were important in preparing the patient for operation are equally important in the postoperative period—attention to organic weaknesses, dehydration, acidosis and electrolyte balance, and nutrition and vitamins.

Recently, both in the preoperative preparation and especially in the postoperative management of debilitated patients, the addition of a small amount (60 cc.) of pure alcohol to each 1,000 cc. of parenteral fluid being administered has been advocated and practiced by some. The alcohol adds to the patient's sense of well-being, and in the postoperative period has a slight sedative and analgesic action so that less morphine is necessary. In addition, it tends to help maintain positive nitrogen balance, since the readily available calories derived from the alcohol provide a certain amount of energy which will, therefore, not have to be obtained from the body reserves.

In persons with normal adrenals the injection of a single dose of corticotropin (ACTH) produces a profound drop in the number of eosinophils in the blood due to the action of the stimulated adrenal cortex. However, if the adrenal cortex is functioning poorly, there

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will be little or no effect on the number of eosinophils. In aged patients who are "doing badly" in general after operation and seem to be "going to pieces," if the corticotropin test indicates poor function of the adrenal cortex substitution therapy in the form of administration of "cortisone" (adrenal cortical extract) has sometimes produced striking improvement in the patient's general condition. Therapy must be continued for some days or longer until the patient's general condition is good. At that time the dosage is very gradually cut down over the course of days so that the adrenal cortex will gradually be stimulated to resume functioning.

It is very important for the aged patient to get out of bed beginning the day after operation or even the afternoon after operation, if possible. This is done no matter what the operation was (unless the patient is in shock), and it is necessary to have plenty of assistance to help support the patient at first. It has been found that early ambulation helps prevent postoperative complications, such as pneumonia, phlebothrombosis, and emboli. Psychologically these patients are tired and discouraged and need a lot of encouragement. Also, I have found that it does more harm than good to try too hard to change habits or customs of many years standing during the few weeks the patient is in the hospital, no matter how illogical or undesirable they may seem.

In conclusion, I would reiterate that the aged often present serious problems when undergoing surgery—urological or otherwise. However, despite these handicaps—with attention to their chronic diseases, nutrition, and water and electrolyte balance and aided by modern therapy, modern methods of anesthesia, and especially the liberal use of whole blood, the vast majority of these patients can be brought through major urological surgery satisfactorily.

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INFILTRATING CARCINOMA OF THE BLADDER

RELATION OF EARLY DIAGNOSIS TO FIVE-YEAR SURVIVAL RATE AFTER COMPLETE EXTIRPATION

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A recent study [1] of 80 cases of carcinoma of the urinary bladder was made in order to determine the influence of the depth of mural infiltration on the five-year results following complete extirpation of the primary growth. Thirty-nine patients subjected to simple cystectomy and 41 to segmental resection (partial cystectomy) prior to Feb. 1, 1946, survived operation. Of 19 patients with tumors infiltrating less than halfway through the muscularis, 14 (74%) lived 5 to 14 years without evidence of recurrence or metastasis, whereas only 2 of 61 patients (3%) with deeply invading tumors survived 5 years (Table 1). Moreover, only 10% of the patients with superficially infiltrating tumors died with evidence of extension of their vesical cancer, as compared with 85% of the patients with deep tumors.

The histologic pattern and degree of cellular differentiation of each tumor, although indicating the potentiality of that tumor for rapid growth and metastasis, were found to exert somewhat less influence on the survival rate than the extent to which the growth had invaded the bladder wall. However, it was pointed out that 54% of the deeply infiltrating tumors were highly malignant, as compared with 37% of the superficially infiltrating tumors. This was attributed to the fact that highly malignant tumors grow more rapidly and consequently are more likely to reach the deeper layers of the bladder wall before the diagnosis is made.

The present study, therefore, concerned the relation of early diagnosis to the depth of mural invasion and thus to the five-year survival rate after extirpation of the primary growth. Since the diagnosis, as a rule, is made only after cystoscopy, and cystoscopy is performed usually only after the onset of certain symptoms, the first objective was to determine the nature and duration of the symptoms which led to the diagnosis.

Of the original 80 patients on whom the previous report was based, 73 had symptoms attributable to the vesical neoplasm. Of the 7 patients eliminated from the series, two had urinary symptoms unrelated to their tumors; in one of these patients cystoscopy was performed because of a coincidental obstruction at the vesical neck and in the other because of a vesical diverticulum. In the remaining five cases the clinical history was not sufficiently detailed to permit inclusion.

The following series, therefore, consists of 14 cases with infiltration extending less than halfway through the muscularis, and 59 cases with infiltration extending halfway through or more. Hematuria and some form of vesical irritability (frequency, urgency, pain, burning on urination, or tenesmus) were the cardinal symptoms; these occurred singly or in combination in all cases (Table 2). In the total group of 73 cases gross hematuria was a complaint in 65; in 7 it was a terminal symptom and in 2 an initial symptom. In six additional cases microscopic hematuria was found on urinalysis, so that in 71 of 73 cases erythrocytes were present in the urine. Vesical irritability was a complaint in 55 cases, although infected urine was reported in only 17 and residual urine, averaging less than 2 oz. (60 cc.) in only 22. Four patients complained of difficulty of urination, three of pains in the rectum, hypogastrium, or bladder, and one of hematospermia, which probably was coincidental.

The histologic classification of the tumors included papillary, epidermoid, and undifferentiated carcinoma,

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1. Jewett, H. J.: Carcinoma of Bladder: Influence of Depth of Infiltration on the Five-Year Results Following Complete Extirpation of the Primary Growth, J. Urol., to be published.

adenocarcinoma, and mucus-forming adenocarcinoma. In the papillary and epidermoid groups well-differentiated, moderately differentiated, and poorly differentiated types were recognized.

In the accompanying chart the average duration of symptoms prior to operation has been determined for each type of tumor, and the results in cases with superficially infiltrating and with deeply infiltrating tumors are compared. Although the number of cases with superficially infiltrating tumors is too small to permit final conclusions, the curves of the duration of symptoms suggest that patients with deeply infiltrating tumors, for the most part, have symptoms for a considerably longer period than those with superficial tumors. In a larger series of cases it would be desirable to ascertain for each type of tumor the longest duration of symptoms compatible with infiltration less than halfway through the muscularis.

Furthermore, it should not be concluded from these curves that patients with deeply infiltrating tumors always have had their symptoms for a much longer period than patients with superficial tumors. These curves merely represent the average duration of symptoms, and in each histologic category there was at least one patient with a deeply infiltrating tumor whose symptoms had been present for a shorter period than is represented by the curve for the group with superficial tumors. Moreover, two cases were eliminated from this series because the symptoms leading to cystoscopy were not attributable to the tumors, which were discovered accidentally.

TABLE 1.—*Relation of Depth of Infiltration of Carcinoma of Bladder to Five-Year Survival Rate After Complete Extirpation*

Depth of Infiltration	No. of Patients	No. Living 5-14 Yr. Without Tumor
Submucosal (Group A)	14	10
Superficial muscular (Group B1) *	5	4
Total superficial infiltration	19	14
Deep muscular (Group B2) †	13	1
Perivesical (Group C)	48	1
Total deep infiltration	61	2

* Group B1 represents infiltration less than halfway through the muscularis.
† Group B2 represents infiltration halfway or more through the muscularis.

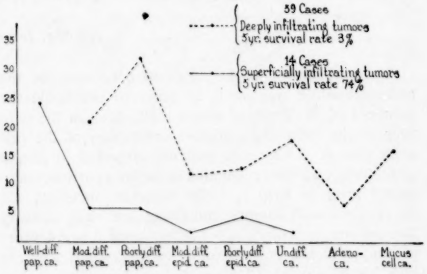
TABLE 2.—*Incidence of Gross and Occult Hematuria and Vesical Irritability in Seventy-Three Cases of Infiltrating Carcinoma of Bladder*

	No. of Cases	Hematuria		Vesical Irritability
		Gross	Occult	
With superficial infiltration	14	12 *	2	7
With deep infiltration	59	53 †	4	48
Total	73		71	55

* In three cases hematuria occurred at the end of urination, and in two cases at the beginning of urination.
† In four cases hematuria occurred at the end of urination.

The curves, however, seem to indicate that a patient with a deeply infiltrating tumor, although occasionally having no symptoms at all or symptoms of very short duration, generally will complain of hematuria or vesical irritability extending over several months. A patient whose symptoms have been present only for several weeks is apt to have a superficial tumor. This, however, is less likely to be true in cases of epidermoid and undifferentiated carcinoma and adenocarcinoma. It should be borne in mind that the symptoms are not necessarily continuous. Their duration as recorded here is measured from the date of the first appearance of the symptoms, which may have disappeared promptly, only to recur a year or more later. This is especially true of hematuria, the degree of which is not a reliable indication of the magnitude of the tumor.

When the diagnosis is made late in the course of the disease, generally because significant symptoms have been disregarded for a period of time, the tumor usually will be deeply infiltrating. As previously pointed out, the five-year survival rate following simple cystectomy or segmental resection for tumors of this sort is about 3%. The more formidable procedures, such as radical cystectomy with resection of the lymphatic drainage area or perhaps pelvic exenteration, eventually may salvage a somewhat higher percentage of the cases in this group, but this is not certain since the survival rate with these procedures has not yet been determined. These operations furthermore may be found to result in a high incidence of postoperative disability. At present little can be offered the patient with a deeply infiltrating tumor other than a certain degree of temporary palliation or an extensive pelvic dissection of unknown efficacy.



The average duration in months of symptoms from tumors of each cell type has been determined. Note the longer average duration of symptoms in the cases with deeply infiltrating tumors.

When the diagnosis is made early as the result of early occurrence of symptoms leading to prompt cystoscopic examination, the tumor in most instances, if infiltrating at all, will be superficial. The five-year survival rate in this superficially infiltrating group is 74% following complete extirpation of the local growth. This figure probably can be increased still more by improvement in technics, especially since only 10% of the patients in this group died with evidence of extension of the vesical cancer.

The reasonably good prognosis associated with superficial tumors, in contrast to the very poor prognosis afforded by deep tumors, should emphasize to the general public, the general practitioner, and the specialist the vital importance to the patient of immediate evaluation of the cause of hematuria or vesical irritability. In regard to the specialist, it is suggested that the treatment used be designed to result in immediate eradication of the

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primary growth. This should be done either by complete local destruction or by extirpation so that superficial tumor cells will not be permitted to reach eventually the deeper layers of the bladder wall.

CONCLUSIONS

Often hematuria or vesical irritability of some degree makes its first appearance while the vesical tumor, if infiltrating at all, is still superficial. In such a case immediate cystoscopic examination after the onset of these symptoms makes possible an early diagnosis. Complete extirpation of this superficially infiltrating tumor results in a five-year survival rate of 74%. Late or neglected symptoms or inadequate treatment after early diagnosis permit the inevitable infiltration of the tumor cells into the deep layers of the bladder wall, and complete extirpation then provides a five-year survival rate of only 3%.

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UNRECOGNIZED PITUITARY NECROSIS (SHEEHAN'S SYNDROME)

A CAUSE OF SUDDEN DEATH

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The clear relationship between a destructive lesion of the anterior portion of the hypophysis and the striking deficiency syndrome associated with it was first described by Simmonds, who attributed the ischemic necrosis to an infarct resulting from minute bacterial emboli lodging in the sinuses of the gland.[1] It was subsequently suggested by Reye that thrombosis of the small sinuses of the anterior lobe of the pituitary could result in necrosis, and that sudden hypotension would favor its occurrence.[2] He also pointed out that the enlarged pituitary of pregnancy and the hypotension resulting from severe postpartum hemorrhage would be an especially predisposing combination of circumstances for such thrombosis.[3] The latter suggestion was factually supported by the observations of several pathologists who noted the association of pituitary necrosis and postpartum hemorrhage.[4] However, the clinical importance of the relationship of postpartum hemorrhage to pituitary necrosis was not clearly understood until the revealing studies of Sheehan.[5] He not only reported the frequent occurrence of pituitary necrosis in women dying late in the puerperium after a difficult labor (one usually complicated by placental retention or postpartum hemorrhage) but he also demonstrated small thrombi in the sinuses of the anterior hypophysis.[6] Sheehan [7] believes that "at a normal delivery there is presumably a physiological reduction of the blood-flow to the anterior lobe; if in addition to this there is a severe general circulatory collapse, it is possible that the blood flow to the anterior lobe may be so reduced that thrombosis occurs in the vessels of the lobe and leads to ischaemic necrosis." Sheehan not only emphasizes the importance of severe postpartum hemorrhage in the pathogenesis of the ischemic necrosis, but also stresses the fact that this lesion is always associated with the end of a term pregnancy. There is as yet no recorded instance occurring during the course of a pregnancy. It is also interesting that in nonpregnant patients pituitary necrosis does not develop as a result of shock or hemorrhage, although it is occasionally encountered in diabetics.[8]

The necrosis of the anterior lobe of the pituitary following on postpartum hemorrhage develops slowly, requiring approximately two weeks.[6] The fresh lesion is never the cause of an immediate postpartum death. The symptoms of such a necrosis do not appear in a clinical sense until at least six months have passed and may require several years to develop, depending on the degree of destruction of the gland. It has been shown experimentally that it requires destruction of at least 70% of the anterior lobe in order to evoke the typical pattern of chronic hypophysial deficiency.[9] There must, however, be a wide individual variation, because there are several reported instances of extensive pituitary necrosis found in patients at postmortem who had not suffered obvious symptoms of pituitary deficiency during life.[10] There is, nevertheless, a correlation between the symptomatology and the severity of the tissue destruction. The varying involvement of the three cell-types (basophil, acidophil,

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3. Reye, E.: Die ersten klinischen Symptoms bei Schwund des Hypophysenvorderlappens (Simmondssche Krankheit) und ihre erfolgreiche Behandlung, Deutsch. med. Wchnschr. **54**: 696, 1928.
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and chromophobe) may also be of importance in determining the symptoms.[11] If the anterior lobe is completely replaced by necrosis, except for a capsule-like remnant of normal cells surrounding the lesion, full-blown Simmonds' disease would eventuate. Such a patient would exhibit symptoms resulting from deficiency of all the hormones produced by the anterior lobe of the hypophysis, namely, the lactogenic, gonadotrophic, adrenotrophic, thyrotrophic, and the growth hormones (Table 1). These extreme instances are not germane to this report; they have been recently reviewed in extensive surveys of the subject.[12] On the other hand, the lesion that does not completely destroy the anterior lobe, leaving some 10 or 15% of normal glandular elements, may not give rise to notable symptoms. In such circumstances, it is possible for the patient to live and to carry on bodily functions on a slightly subclinical level without apparent signs of Simmonds' disease. On close observation, however, it is possible to detect certain signposts of

TABLE 1.—*Symptomatology of Multiple Hormonal Deficiency of Massive Pituitary Necrosis*

Hormone Deprived	Symptoms *
1. Lactogenic	Absence of lactation
2. Gonadotrophic	Amenorrhea
3. Growth	Microsplanchnia
4. Thyrotrophic	Absence of sweating
	Lowered basal metabolism rate (i. e. minus 35%), resulting in torpor, coldness, constipation, and myxedema
5. Adrenotrophic	Anorexia with weight loss
	Asthenia
	Lowered blood pressure
	Hypoglycemia
	Loss of sexual hair
	Personality change, and signs of mental deterioration
	Lack of sebaceous secretion
	Loss of capillary tone in skin (pallor)
	Decreased libido

* Clinical pattern requires years to develop fully. It is rarely complete, most patients having subclinical variety with minimal symptoms.

adrenocortical insufficiency (Table 1), which, when properly correlated, might unmask the presence of pituitary deficiency. Pituitary necrosis following postpartum hemorrhage, justifiably termed "Sheehan's syndrome" in recent medical reports,[13] may be a cause of sudden death, obstetric or otherwise, by obstructing essential physiological function.

The human organism responds to any systemic stress, occasioned by a variety of nonspecific noxious agents, by exhibiting part or all of a general adaptation syndrome.[14] The manifestations of this reaction do not depend on the nature of the stress but rather on its severity and the duration of exposure to it. An increase of hypophysial activity which, in turn, leads to augmented function of the adrenal cortex is required for successful resistance to stress. The all-important response of the adrenal cortex depends on the release of a single hypophysial corticotropin (ACTH) which exerts qualitatively different effects depending on "certain conditioning factors." [14] It has been shown experimentally that "a hypophysectomized animal, like the adrenalectomized animal, is extremely sensitive to a variety of non-specific stresses."[15] Any lesion, therefore, which destroys most of the anterior hypophysis automatically interferes with the secretion and discharge of corticotropin following exposure to stress, resulting in insufficiency of the pituitary-adrenocortical mechanism of defense. The administration of an anesthetic agent during any surgical operation is an example of a stressful situation which demands of the patient an adequate pituitary gland as well as a well-responding adrenal cortex. A pituitary necrosis large enough to interfere with the supply of acutely demanded corticotropin, or the failure of the adrenals to secrete the essential corticoids, could, under surgical circumstances, result in sudden death. Thorn has emphasized that such a catastrophe, directly attributable to adrenocortical failure, occurs through the mechanism of cardiac arrest.[16] This thesis—an unpredictable death during operation as a result of unrecognized pituitary necrosis—is supported by the following clinical experience.

REPORT OF A CASE

Mrs. B. B., a white woman aged 30, was admitted to the Mount Sinai Hospital on April 19, 1949, in preparation for an elective cesarean section at the 36th week of pregnancy. She had been known as a juvenile diabetic since the age of 14, had married at 18, and had experienced four previous pregnancies, summarized chronologically as follows:

1. In 1939 pregnancy had resulted in an antepartum stillborn infant weighing 3,629 gm. at term, following an uneventful gestation and an average-type labor. Her daily dosage of insulin throughout this pregnancy had varied from 20 to 30 units.

2. In 1940 pregnancy had resulted in a spontaneous, complete abortion at the 10th week. The insulin dosage was unchanged.

3. In 1943 pregnancy had resulted—without any obstetric or diabetic complication—in a normal female infant weighing 3,855 gm. at term. Assays of urinary gonadotrophins, performed every two weeks from the beginning of the fifth month, had remained within normal limits. The daily dosage of insulin throughout this pregnancy varied from 10 to 20 units.

4. In 1947, during which assays of the urine for both pregnanediol and gonadotrophins were done every two weeks from the beginning of the fourth month, gonadotrophin levels remained within normal limits, but the excretion of pregnanediol was consistently low, varying from 35 to 44 mg. per 24 hours of urine excretion in spite of the use of increasing oral doses of diethylstilbestrol, starting at 50 mg. daily in the third month and attaining 110 mg. daily in the ninth month. The insulin dosage was similar to that employed during the previous pregnancies, varying from 10 to 20 units daily. This pregnancy was terminated by a smoothly progressive labor of six hours which resulted in the spontaneous birth, without anesthesia, of a live female infant weighing 4,762 gm., who died in 12 hours because of intracranial hemorrhage. The third stage of labor was complicated by a massive postpartum hemorrhage with an estimated blood loss of 1,500 cc., resulting in shock from which the patient recovered in two hours following transfusion of 2,000 cc. of whole blood. Several months later the patient's insulin requirement began to diminish. She experienced repeated episodes of

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insulin shock, and discontinued the use of insulin in May, 1948, five months after the delivery. Fasting blood sugars, taken at monthly intervals thereafter, ranged from 79 to 105 mg. per 100 cc.

Aside from noting excessive fatigue, the patient had been well during the fifth (current) gestation, the diabetic state apparently arrested. On her admission to the hospital, April 19, 1949, it

Fig. 1.—Anterior hypophysis, showing area of necrosis which involves about two-thirds of the lobe (× 30).

was noted that urinalysis revealed a faint trace of protein but no sugar or acetone, the blood count was entirely normal, and the fasting blood sugar was 100 mg. per 100 cc. A classical cesarean section was performed the following morning, with the aid of continuous spinal anesthesia (initial dose, 50 mg. of 5% solution of procaine). The incision was made at 10:58 a. m., and a live female infant, weighing 2,948 gm., was delivered at 11:07 a. m., at which moment, the patient complained of weakness, appeared momentarily dyspneic, and then became unconscious. At 11:08 a. m., no cardiac action was palpable through the diaphragm. Various resuscitative measures, including intravenously administered ephedrine, continuously administered (endotracheal) oxygen, and the intracardiac injection of 4 cc. of 2% solution of procaine, were employed within a few minutes. At 11:20 a. m., the chest wall was incised and opened widely, enabling direct massage of the heart which responded by contracting ineffectually several times per minute for 20 minutes. (The baby was in excellent condition at birth, continued to thrive, and has passed her second birthday uneventfully.)

The postmortem examination, performed one hour after death, revealed significant positive findings in the pituitary gland, adrenals, thyroid, and pancreas. The pituitary was of average configuration but, on section, approximately two-thirds of the anterior lobe was replaced by a circumscribed solid area surrounded by a greyish-tan, gelatinous-appearing zone. Microscopically, the lesion showed a peripheral acinar area and a central amorphous core. The latter consisted of irregular strands of mucin-like material, containing occasional histiocytes, capillaries, and degenerating acini. The rim of normal hypophysial tissue surrounding the necrotic area showed essentially normal acini (Fig. 1).

The adrenal glands revealed both gross and microscopic evidence of cortical atrophy and lipoid depletion. The cortical layers averaged from 0.87 to 1.09 mm. in width. On comparison with adrenal glands of patients presumed to have died following a state of chronic stress and with glands from a normally pregnant woman who died suddenly following delivery, the cortical atrophy is apparent and approximates that characteristic of chronic stress (Table 2). The adrenal cortex from the normally pregnant woman showed abundant lipoids and measured from 1.70 to 2.2 mm., corresponding to the hypertrophy known to occur in pregnancy (Fig. 2 and 3).

The thyroid gland appeared normal macroscopically, but showed evidence of diminished activity on microscopic study.

TABLE 2.—*Comparison of Width of Adrenal Cortex in Women Who Died of Varied Causes*

Cause of Death	Width of Adrenal Cortex (Mm.)
Normal Pregnancy	
Sudden death immediately following delivery at term, attributed to anesthesia	1.70 to 2.20
Chronic Stress	
1. Gastric carcinoma	0.70 to 1.02
2. Subacute bacterial endocarditis	0.85 to 1.10
3. Myasthenia gravis	0.92 to 1.22
Pituitary Necrosis	
Death during cesarean section (Mrs. B. B.)	0.87 to 1.09

The pancreas was grossly normal but revealed extensive atrophy of the islets on microscopic study. It was concluded that the patient showed anatomic evidence of an old infarct of the anterior hypophysis, distinct atrophy of the adrenal cortex, slight atrophy of the thyroid gland, and marked destruction of the pancreatic islets.

Fig. 2.—Adrenal gland from pregnant woman at term, who died suddenly. The hypertrophy of the cortex can be noted (× 30).

COMMENT

In retrospect, the sequence of events leading to the sudden death of Mrs. B. B. appears crystal-clear. The pituitary lesion, in this instance, could have arisen either as a result of localized thrombosis in a diabetic [8] or following the severe postpartum hemorrhage of the fourth pregnancy.[17] Whatever its origin, its presence was not

17. Sheehan.[5] Sheehan and Murdoch.[6] Sheehan.[7]

recognized. A careful restudy of the patient's history between the fourth and fifth pregnancies revealed three important features which were, in the light of subsequent events, meaningful.

1. Following the fourth delivery and its accompanying postpartum hemorrhage, the patient's breasts remained flaccid throughout the puerperium, secreting nothing—not even colostrum.

2. The regrowth of pubic hair was slow. Moreover, when the hair was again present, it was meager in comparison to the luxuriant growth formerly present.

3. The repeated episodes of insulin shock, leading to the final exclusion of insulin in a patient who had been diabetic for many years, point to a state of pituitary and adrenocortical insufficiency which was not properly evaluated. The patient was, in effect, a human example of the Houssay phenomenon. The occurrence of pituitary hypofunction in a true diabetic—one whose diabetes is due solely to a deficiency of insulin—is exceedingly rare.[18] Such a patient should show, as in the case reported here, amelioration of the diabetes, just as pancreatic diabetes in the experimental animal is ameliorated by hypophysectomy.[19] Only six such patients have been previously reported.[20]

The occurrence of a subsequent pregnancy in a patient who had sustained sufficient thrombosis in the sinuses of the anterior lobe of the pituitary to result in massive necrosis of the gland is surprising. The earliest manifestations of pituitary deficiency concern the absence of lactation and the inability of the patient to menstruate properly. Amenorrhea is usually a prominent symptom. There are, however, four previously reported instances of proved pituitary necrosis followed by subsequent pregnancy.[21] Each of the four patients died during the puerperium, and at post-mortem each showed, as in our patient, a massive scar of pituitary necrosis traceable in retrospect to a traumatic, shocking episode at the conclusion of a prior pregnancy. It is difficult to reconcile such sudden puerperal deaths, presumably because of pituitary necrosis, with those patients who show signs of hypopituitarism following postpartum hemorrhage (Sheehan's syndrome) and who are apparently improved by another pregnancy[22] or by injections of pituitary hormones.[23] These opposing observations emphasize, perhaps, that the eventual outcome in Sheehan's syndrome varies with the site and degree of the necrosis, as well as with the type of cell involved. The mitigation of the symptoms during pregnancy is understandable and may be ascribed to the production of corticosteroids and possibly of corticotropin by the placenta.[24]

The unhappy turn of events in our patient, and the certain knowledge that a subsequent pregnancy could take place in the presence of pituitary necrosis, forces on us the realization that the later pregnancy in any such patient could be fatal. It is apparent that sudden death under stress might be the fate of any woman who sustains an unrecognized partial pituitary necrosis following obstetric shock at term. It would, therefore, be life-saving to identify such potential candidates for catastrophe from among the puerpera who are, in Jeffcoate's words, "saved from the brink of the grave and live to show evidence of permanent pituitary damage."[25] In order to recognize the presence of subclinical hypopituitarism, all women salvaged from severe postpartum hemorrhage should be subjected later to a series of endocrinologic investigations designed to detect insufficiency of the adrenal cortex secondary to hypophysial necrosis (Table 3). We have, in association with our department of endocrinology and that of the Philadelphia General Hospital, initiated such a study.[26] Progress is admittedly slow, because of the difficulty in gathering a sufficient number of patients who had previously experienced an episode of severe postpartum hemorrhage associated with shock. To date,

Fig. 3.—Adrenal gland of patient who had unrecognized pituitary necrosis, showing decrease in cortical depth (× 30).

18. Balfour, W. M., and Sprague, R. G.: Symposium on Diabetes Mellitus: Association of Diabetes Mellitus and Disorders of the Anterior Pituitary, Thyroid and Adrenal Cortex, Am. J. Med. **7**: 596, 1949.

19. Houssay, B. A., and Biasotti, A.: La diabetes pancreática de los perros Hipofisoprivos, Rev. Soc. argent. biol. **6**: 251, 1930; abstracted, Le diabète pancréatique des chiens hypophysectomisés, Compt. rend. Soc. biol. **105**: 121, 1930.

20. Marzullo, E. R., and Handelsman, M. B.: Pituitary Necrosis and Diabetes Mellitus, J. Clin. Endocrinol. **11**: 537, 1951.

21. Sheehan.[3] Sheehan and Murdoch.[8] Jakob, A.: Zwei Falle von Simmondsscher Krankheit (hypophysäre Kachexie) mit besonderer Berücksichtigung der Veranderungen im Zentralnervensystem, Arch. path. Anat. **246**: 151, 1923. Farquharson, R. F.; Belt, T. H., and Duff, G. L.: Simmonds' Disease: Clinical and Pathological Observations on 4 Cases, Tr. Am. Clin. & Climatol. A. **54**: 106, 1938.

22. Sheehan, H. L., and Murdoch, R.: Postpartum Necrosis of Anterior Pituitary: Production of Subsequent Pregnancy, Lancet **1**: 818, 1939. Murdoch, R., and Govan, A. D. T.: Therapeutic Effect of Subsequent Pregnancy in Simmonds' Disease: Case Report, J. Obst. & Gynaec. Brit. Emp. **58**: 18, 1951.

23. Sheehan, H. L.; Spence, A. W.; Fraser, R., and Simpson, S. L.: Discussion on Simmonds' Disease, Proc. Roy. Soc. Med. **41**: 187, 1948. Nassar, G.; Djanian, A., and Shanklin, W.: Etiological Significance of Ergot in Incidence of Postpartum Necrosis of the Anterior Pituitary: Preliminary Report, Am. J. Obst. & Gynec. **60**: 140, 1950.

24. Jailer, J. W., and Knowlton, A. I.: Simulated Adreno-Cortical Activity During Pregnancy in Addisonian Patient, J. Clin. Invest. **29**: 1430, 1950.

25. Jeffcoate, T. N. A.: Post-Partum Necrosis of Pituitary, Irish J. M. Sc. **6**: 256, 1948.

26. Schneeberg, N. G.; Viellard, C.; Perloff, W. H., and Israel, S. L.: Unpublished data.

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seven such patients have been studied. Six of the seven have shown a significantly reduced excretion of formaldehydogenic corticosteroids, but most of the other results (Table 3) have thus far been within normal range.

It is presumed that the frequency of postpartum pituitary necrosis is not great. Nevertheless, the importance of identifying the least number of such patients cannot be gainsayed, for there is much yet to learn of both its etiology and clinical management. Occurring in different degrees, the disease has varied manifestations. The fully developed clinical syndrome, as represented by Simmonds' disease, is comparatively rare. Only a very few of the women suffering this complication as a result of postpartum hemorrhage have easily recognized clinical symptoms. The challenge, therefore, is not to find the patient with patent signs of hypopituitarism, but rather to discover the victim whose clinical evidence is masked by seemingly physiological behavior, who requires more subtle means of recognition.

TABLE 3.—*Outline of Fifteen Investigations Aiding the Recognition of Subclinical Hypopituitarism* [26]

Organ Evaluated		Method of Study
Pituitary	1.	X-ray of sella turcica
	2.	Urinary bio-assay for gonadotrophins
Ovary	3.	Urinary bio-assay for estrogen
	4.	Vaginal smears
	5.	Endometrial biopsy
Thyroid	6.	Basal metabolism rate
	7.	Protein-bound iodine of serum
	8.	Cholesterol levels
	9.	Radioactive iodine (tracer study)
Adrenal	10.	Insulin tolerance test
	11.	Robinson-Kepler-Power water excretion test
	12.	Eosinophil response to epinephrine and to corticotropin
	13.	Assays for 17-ketosteroids and 11-oxysteroids
	14.	Estimation of sodium, potassium, and chlorides in blood
Pancreas	15.	Intravenous glucose tolerance test and simultaneous determination of serum inorganic phosphate

SUMMARY AND CONCLUSIONS

The pituitary necrosis which may follow severe postpartum hemorrhage (Sheehan's syndrome) varies in degree. If it is massive, the resultant symptoms are likely to be those of an anterior hypophysectomy, expressing deficiency of the lactogenic, gonadotrophic, adrenotrophic, thyrotrophic, and growth hormones. If it is moderate, its presence may be obscured by the patient's ability to lead an apparently normal life, including both menstrual and reproductive functions. Under such circumstances, the masked pituitary necrosis would not interfere with ordinary activity, but might result in failure of the hypophysis to sustain the individual through a period of physical stress.

This thesis is exemplified by the history of a juvenile diabetic who suffered a severe postpartum hemorrhage at the conclusion of a fourth pregnancy and who succumbed suddenly at the onset of a planned cesarean section at the termination of her fifth pregnancy because of a massive, previously undetected, fibrotic lesion of the anterior hypophysis. In reviewing the patient's history after the post-mortem, it was learned that some signs of pituitary deficiency had developed following the postpartum hemorrhage, but that they had been misinterpreted.

The importance of attempting to identify the presence of pituitary necrosis in all women who recover from severe postpartum hemorrhage is emphasized, and an outline of the required endocrinologic investigations is presented. It is averred that such a patient should be shielded from any stress which might necessitate an immediate hypophysial response with release of corticotropin.

2116 Spruce St. (Dr. Israel).

TRANSIENT INVERSION OF T WAVES AFTER PAROXYSMAL TACHYCARDIA

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and
A. Henry Clagett Jr., M.D., Wilmington, Del.

An electrocardiographic syndrome consisting of transient inversion of T waves after paroxysms of tachycardia in normal hearts has been recognized for some time. The resemblance of these changes to those of serious organic heart disease makes obvious the importance of their recognition and understanding. The recent observation of this syndrome in two apparently healthy young men prompted us to review the literature on this subject. It is our belief that knowledge of the frequency, characteristics, and importance of this syndrome is not as widespread as it should be.

In 1935, Graybiel and White [1] stressed the fact that inversion of T waves is not necessarily associated with organic heart disease, and that care must be taken in the diagnosis of heart disease when inverted T waves are the only electrocardiographic finding. They cited a number of conditions in which inverted T waves occurred with no evidence of associated cardiac disorder. Among their cases were two of paroxysmal tachycardia, one of which occurred in a young man with the "short P-R interval associated with prolonged QRS" syndrome. In this patient episodes of ventricular tachycardia were prone to develop following which there was transient inversion of T_1. Transient T wave inversion in leads 2 and 3 was noted in another young man with paroxysmal bouts of ventricular tachycardia but no evidence of heart disease.

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Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. Graybiel, A., and White, P. D.: Inversion of the T-Wave in Lead I or II of the Electrocardiogram in Young Individuals with Neurocirculatory Asthenia, with Thyrotoxicosis, in Relation to Certain Infections, and Following Paroxysmal Ventricular Tachycardia, Am. Heart J. **10**: 345, 1935.

In addition to the 2 cases reported here, we have been able to find reports of 24 well-documented cases of this syndrome.[2] Only those cases that fulfilled the following criteria were included: no evidence of cardiac disease; follow-up with serial electrocardiograms after cessation of the tachycardia; and well-demonstrable transient T wave inversion in the absence of other electrocardiographic changes suggesting cardiac disease. The Table summarizes the findings in these reported cases and in the two recently observed by us.

While the age of the patients varied from 13 to 60, most were under the age of 40, and the majority were males.

real, since the patient with paroxysmal ventricular tachycardia, because of its seriousness, usually is studied more thoroughly than the one with paroxysmal auricular tachycardia. Serial electrocardiograms following all types of tachycardia are necessary to determine this point.

The duration of the tachycardia varied from a few minutes to 27 days. This had no relationship, however, to the magnitude or the duration of the T wave changes. In the case reported by Freundlich,[2l] an episode of paroxysmal ventricular tachycardia lasting 10 minutes was followed by inversion of T_2 and T_3 for a period of three weeks. On the other hand, the case of paroxysmal ventricular tachycardia reported by Dubbs and Parmet[2e] as

Summary of Previously Reported Cases of Transient T Wave Inversion Following Tachycardia

Author	Patient's Age	Patient's Sex	Tachycardia Type	Tachycardia Duration	Leads with T Wave Inversion	Duration of Changes	Remarks
Grayblel & White [1]	"Young"	M	PVT	< 24 hr.	1	Gradual return to normal	Short P-R; prolonged QRS
	33	M	PVT	< 24 hr.	2, 3	< 47 days	.....
Campbell, M. & Elliott [2a]	21	M	PVT	10 days	1	< 21 days	.....
	39	M	PVT	17 days	2, 3	11 days	Died during attack at age 45; autopsy negative
Cossio, Sabathie, & Berconsky [2b]	13	M	PVT	36 hr.	2, 3	40 days	.....
Campbell [2c]	45	F	PAT	3 days	3	3 days	.....
	44	F	PAT	6 days	1, 2, 3	7 days	Short P-R; prolonged QRS
	21	M	PVT	4 days	2, 3	10 days	.....
Currie [2d]	13	F	PVT	36 hr.	2, 3	< 30 days	Patient had two attacks at a 10-month interval
				3 hr.	2, 3	< 28 days	
Dubbs & Parmet [2e]	52	M	PVT	21 days	2, 3	4 days	.....
Geiger [2f]	38	M	PAT	44 hr.	2, 3	< 35 days	Patient had two attacks at a 10-year interval
				9 hr.	2, 3	> 12 days, < 26 days	
				.....	.....		
Cossio, Vedoya, & Berconsky [2c]	18	M	PVT	23 days	1, 2, 3	45 days	.....
Zimmerman [2h]	47	F	SV	11½ hr.	1, 4r	2 days	Mild hypertension; moderate arteriosclerosis
Joly [2i]	35	M	PVT	9 days	2, 3	< 21 days	.....
Solarz [2j]	40	M	SV	2½ days	1, 2, 3, CR 1-6	> 22 days, < 28 days	.....
Smith [2k]	23	M	PVT	4 days	All	57 days	Three separate attacks observed in same patient
				21 hr.	All	15 days	
				26 hr.	2, 3	12 days	
Freundlich [2l]	39	M	PVT	9 hr.	1, 4	9 days	.....
	38	F	PVT	10 min.	2, 3	3 weeks	.....
Videla [2m]	60	M	PVT	22 hr.	1, CR 3-6	28 days	.....
	60	Not given	Nodal	"Minutes"	3, CR 1-3	10 days	.....
Etala & Berreta [2n]	21	M	PVT	.....	1, 2, 3	.....	Two attacks in same patient. Autopsy following 2d attack revealed normal heart
				.....	1, 2, 3, CR 4-6		
Schulten [2o]	27	M	PVT	?	1, 2, 3	26 days	.....
Essel [2p]	25	M	PVT	19 days	2, 3	12 days	.....
Smith [2q]	29	M	PVT	26 hr.	2, 3	< 21 days	.....
Myerson, R. M. & Clagett, A. H.	32	M	PAT	14 hr.	V_1-V_6, low in 1, 2, 3, aV_1, aV_F	4 days	.....
	24	M	PAT	10 hr.	2, 3, aV_F, V_5, V_6, low in 1 and V_4	> 3 days, < 23 days	.....

Abbreviations: PVT is Paroxysmal Ventricular Tachycardia; PAT is Paroxysmal Auricular Tachycardia; SV is Supraventricular.

Transient T wave inversion followed paroxysmal ventricular tachycardia in 18 cases, paroxysmal auricular tachycardia in five, "supraventricular" in two, and nodal in one. This relationship may be apparent rather than lasting for 21 days was followed by inversion of T_2 and T_3 for only four days.

It is difficult to evaluate the various patterns of T wave inversion because many of these cases were reported before multiple chest leads and unipolar electrocardiography were used. There seems to be a predominance of a "posterior" pattern; that is, of inverted T waves in leads 2 and 3. This occurred in 15 cases. Five cases showed what might be considered as an "anterior" pattern; that is, T wave inversion in lead 1 and the chest leads. The remainder of the cases showed a mixed pattern of T wave inversion.

No other consistent electrocardiographic changes have been noted. In a few instances transient and minor depression of the S-T segment has been mentioned. In a very careful study, Videla [2m] pointed out that the pro-

2. (*a*) Campbell, M., and Elliott, G. A.: Paroxysmal Tachycardia: Etiology and Prognosis of 100 Cases, Brit. Heart J. **1**: 123, 1939. (*b*) Cossio, P.; Gonzalez Sabathie, L., and Berconsky, I.: Alteraciones del segmento S-T de la onda T durante o después de crisis prolongadas de taquicardia paroxística, Rev. argent de cardiol. **8**: 168, 1941. (*c*) Campbell, M.: Inversion of T Waves After Long Paroxysms of Tachycardia, Brit. Heart J. **4**: 49, 1942. (*d*) Currie, G. M.: Transient Inverted T Waves After Paroxysmal Tachycardia, ibid. **4**: 149, 1942. (*e*) Dubbs, A. W., and Parmet, D. H.: Ventricular Tachycardia Stopped on the Twenty-First Day by Giving Quinidine Sulfate Intravenously, Am. Heart J. **24**: 272, 1942. (*f*) Geiger, A. J.: Electrocardiograms Simulating Those of Coronary Thrombosis After Cessation of Paroxysmal Tachycardia, ibid. **26**: 555, 1943. (*g*) Cossio, P.; Vedoya, R., and Berconsky, I.: Modificaciones del electrocardiograma después de ciertas crisis de taquicardia paroxística, Rev. argent. de cardiol. **11**: 164, 1944. (*h*) Zimmerman, S. L.: Transient T-Wave Inversion Following Paroxysmal Tachycardia, J. Lab. & Clin.

(Footnote 2 continued on next page)

longation of the Q-T interval, often considered part of the post-tachycardia syndrome, was present only in cases where quinidine had been used. In no case has there been any change, such as the development of Q waves, in the QRS complex.

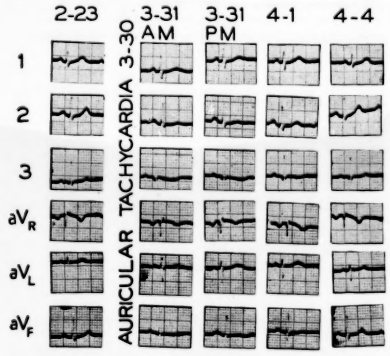

Fig. 1.—Limb leads (Case 1) showing serial electrocardiograms before and after tachycardia.

The mechanism of post-tachycardial T wave inversion is unknown. Cossio and others [2b] attributed the changes to "enlargement of the heart or right ventricular strain." Currie [2d] postulated that the changes were caused by a "completely reversible process indicating some degree of exhaustion or strain of the heart muscle." Dubbs and

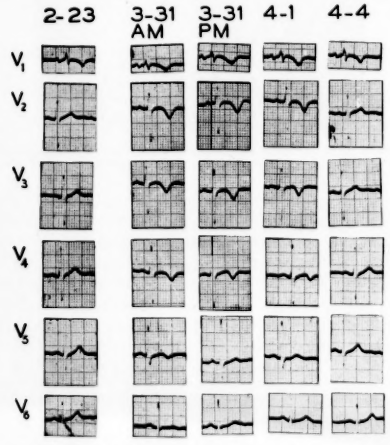

Fig. 2.—Chest leads (Case 1) showing serial electrocardiograms before and after tachycardia.

Parmet [2e] attributed the transient T wave inversion to "fatigue and exhaustion of the myocardium resulting from prolonged tachycardia." Geiger [2f] offered the hypothesis of "myocardial ischemia associated with a sharply diminished output."

Cossio, Vedoya and Berconsky [2g] and later Smith [2k] emphasized the fact that post-tachycardial changes occurred most frequently after ventricular tachycardia, and they postulated that the changes were based on gradually diminishing activity in the automatic focus responsible for the ventricular tachycardia. Anaphylactic and autonomic factors have also been mentioned.

The problem remains unsolved. It seems likely that tachycardia affects repolarization in a manner similar to smoking or the drinking of cold water. It is not known why some respond to these stimuli in this manner while the majority do not.

REPORT OF CASES

CASE 1.—A white man, aged 32, was first seen Feb. 23, 1949, with a history of innumerable attacks of rapid heart action, one of which showed electrocardiographic evidence of paroxysmal auricular tachycardia. The episodes occurred for no apparent reason and lasted from three to six hours, subsiding spontaneously. Just prior to being seen he had noticed some increase in the frequency of his attacks, the last occurring on Feb. 7, 1949.

Past history revealed a left nephrectomy in 1942 following trauma. Postoperatively he had an attack of homologous serum jaundice.

Physical examination was within normal limits, except for a well-healed left nephrectomy scar. The heart was not enlarged, the rhythm was regular with a rate of 80 per minute, and there were no murmurs. The blood pressure was 118/80.

Fig. 3.—Strip of lead 2 (Case 1) showing paroxysmal auricular tachycardia (March 30, 1949).

Laboratory studies, including complete blood cell count, urinalysis, liver and renal function tests, blood cholesterol, and basal metabolic rate, were all within normal limits. Roentgenogram of the chest revealed no findings of significance. An electrocardiogram made on Feb. 23, 1949, (Figs. 1 and 2) was interpreted as showing an inverted T wave in lead V_4; this was considered to be within normal limits.

The patient was readmitted to the hospital on March 30, 1949, complaining of palpitation and apprehension of about 10 hours' duration. Physical examination revealed a heart rate of 180 per minute. The rhythm was regular and the electrocardiogram showed evidence of paroxysmal auricular tachycardia (Fig. 3). Carotid sinus and eyeball pressure were ineffectual in relieving the tachycardia, and he was given 3 grains (0.194 gm.) of quinidine followed by 6 grains (0.389 gm.) three hours later. Shortly thereafter, his pulse rate fell to 96 per minute. The total duration of the attack was 14 hours.

An electrocardiogram made shortly after conversion to normal sinus rhythm revealed inverted T waves in leads V_1 through V_6, and T waves of low voltage in leads 1, 2, 3, aV_L, and aV_F. Neither S-T changes nor Q waves were present. Serial electro-

Med. **29**: 598, 1944. (*i*) Joly, F.: Deformation électrocardiographique transitoire après acces tachycardiques paroxystiques, Arch. des mal du Coeur **37**: 42, 1944. (*j*) Solarz, S. D.: So-Called "Infarction Type" Electrocardiographic Changes Following Paroxysmal Tachycardia, Ann. Int. Med. **27**: 447, 1947. (*k*) Smith, L. B.: Paroxysmal Ventricular Tachycardia Followed by Electrocardiographic Syndrome with Report of Case, Am. Heart J. **32**: 257, 1946. (*l*) Freundlich, J.: Paroxysmal Ventricular Tachycardia, ibid. **31**: 557, 1946. (*m*) Videla, J. G.: El síndrome electrocardiográfico Post-Taquicárdico, Rev. argent. de cardiol. **14**: 30, 1947. (*n*) Etala, F., and Berreta, J. A.: Estudio anatamo-Clinico de un caso de síndrome electrocardiográfico post-taquicardico, ibid. **15**: 133, 1948. (*o*) Schulten, H.: Ueber 2 Fälle von paroxysmaler Tachykardie mit eigenartigen elektrocardiographischen Folgeerscheinungen, Ztschr. f. Kreislaufforsch. **34**: 104, 1942. (*p*) Essel, L.: Alterations transitoires de l'électrocardiogramme après des crises de tachycardie ventriculaire paroxystique, thesis, Paris, 1945. (*q*) Smith, J. G.: The Electrocardiographic Syndrome Following Paroxysmal Tachycardia, Ann. Int. Med. **31**: 504, 1949.

cardiograms showed a rapid return to a normal configuration, although T wave inversion persisted in V_1. Apparently this is normal for this patient.

In the past 16 months the patient has continued to have bouts of paroxysmal auricular tachycardia. One of these was followed electrocardiographically and again transient inversion of T waves was noted following cessation of the tachycardia.

It should be noted that any of the electrocardiograms made within 48 hours of the tachycardia might be interpreted as being caused by myocardial disease. The rapid return to normal and the lack of S-T segment and Q wave changes are presumptive evidence of the benign nature of these changes.

CASE 2.—A white man, aged 26, was admitted to the hospital on May 6, 1950, complaining of the sudden onset of shortness of breath, palpitation, weakness, and apprehension about four hours prior to entry. He stated that he had had two similar, though shorter attacks, in 1944.

Past history was noncontributory. Physical examination was normal except for a heart rate of 160. The rhythm was regular, the heart normal in size, and there were no murmurs. The blood pressure was 120/80.

Results of routine laboratory studies including roentgenogram of the chest were normal. An electrocardiogram on admission showed evidence of paroxysmal auricular tachycardia.

Vagal stimulation was ineffective. Three grains of quinidine were given orally three hours prior to the cessation of the attack, the duration of which was 10 hours.

An electrocardiogram taken shortly after conversion to normal sinus rhythm revealed inverted T waves in leads 2, 3, aV_F, V_5 and V_6, and T waves of low amplitude in leads 1 and V_4. No change in S-T segment or Q waves was noted.

On May 8, 1950, thirty-six hours after admission of the patient to the hospital, the T waves were upright in leads V_5 and V_6, though still inverted in leads 2, 3, and aV_F.

On May 9, 1950, T waves were low but upright in leads 2 and aV_F, and flat in lead 3.

The patient was last seen on May 29, 1950, at which time the T waves were upright in all leads.

SUMMARY

The literature and previous case reports on T wave inversion following tachycardia are reviewed and two cases of T wave inversion after auricular tachycardia are presented.

The shortness of the period during which the inversion lasts, and the lack of other cardiac abnormalities are presumptive evidence of the benign nature of the changes after tachycardia. Paroxysmal auricular tachycardia is a common occurrence in young adults, and the symptomatology of the attack may simulate myocardial infarction. Since the electrocardiogram may show changes suggesting infarction, the physician may be misled into diagnosing a serious myocardial lesion. Serial tracings will aid in the proper evaluation of the electrocardiogram as a part of the total clinical picture and should reduce such errors of diagnosis to a minimum.

Medical Research.—The uniformity of nature and the unity of science forbid us to circumscribe the content of medical research. By so much as man has a body, the methods and the knowledge of physics and chemistry are of primary importance to medical research. By so much as that body is alive, medical research finds all the fields of biology at least germane to its interests, and suggestive by analogies and comparisons. The subtleties of man's thoughts and emotions and the far reaches of his spirit . . . extend the bearing of medical research in other directions or dimensions. Nor is medical research limited at all to the study of disease. The very unity of science justifies, where, indeed, it does not enjoin, the use of any science to extend and to refine our knowledge of the substance, the behavior, in short the nature of man.—Alan Gregg, The Furtherance of Medical Research, New Haven, Yale University Press, 1941, p. 2.

CLINICAL NOTES

ENTRANCE OF COMMON BILE DUCT INTO A DUODENAL DIVERTICULUM

REPORT OF A CASE CORRECTED BY SURGERY

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and
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Cases in which the common bile duct enters a duodenal diverticulum are apparently exceedingly rare. Recently Collett, Tirman, and Caylor [1] reported a case in which this condition was recognized roentgenologically by cholecystograms made after cholecystectomy and T-tube drainage of the common duct. In a review of the literature these authors were able to find only five cases reported prior to 1949. In all of these the anomaly was found at autopsy. The following case, associated with a duodenal ulcer and a jejunal diverticulum, is of interest because the condition was corrected surgically by partial gastrectomy, excision of the duodenal diverticulum and a transplantation of the common duct into the cut end of the duodenum.

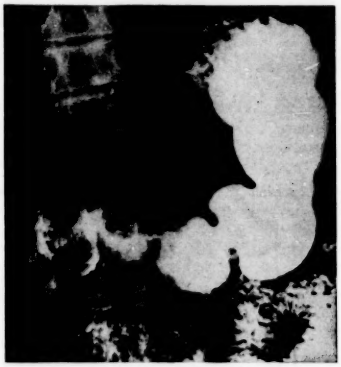

Fig. 1.—X-ray of upper gastrointestinal tract revealing diverticulum in second portion of duodenum and deformity of duodenal cap due to ulcer.

REPORT OF CASE

Patient A. R., a 65-year-old white woman, was referred to the Clinic on Jan. 12, 1951, with a diagnosis of probable duodenal tumor. For four months she had had recurrent attacks of mild midepigastric pain and distress in the right upper abdominal quadrant. The discomfort was described as a sensation of swelling and pressure in the upper part of the abdomen "as if pockets of gas were accumulating." There was no apparent relationship to food or meals. She had never been jaundiced, nor had she

From the Surgical Service of the Western Montana Clinic.

1. Collett, H. S.; Tirman, W. S., and Caylor, H. D.: Roentgen Demonstration of the Common Duct Entering a Duodenal Diverticulum, Radiology 55: 72 (July) 1950.

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noticed any blood in her stools. Her past history was noncontributory except for a mild attack of upper abdominal distress 20 years previously, which lasted 24 hours and was thought to be due to gallbladder trouble.

The patient was 151 cm. (4 ft., 11½ in.) tall and weighed 49.9 kg. (110 lb.). Examination of the head, neck, heart, lungs, pelvis, and rectum revealed that all were essentially normal. The blood pressure was 160/90. Abdominal examination revealed slight epigastric tenderness but no palpable masses. The urine and hemoglobin were normal. The serum bilirubin was 0.12 mg. per 100 cc. of serum.

Roentgenograms of the upper gastrointestinal tract (W. B. C.) revealed a large lesion in the second portion of the duodenum, which was thought to be a diverticulum or tumor (Fig. 1). In addition, there was a deformity of the duodenal cap, thought to be due to an ulcer. The stomach was normal. Cholecystograms revealed a normally functioning gallbladder. Chest roentgenograms were normal. The preoperative diagnosis was probable duodenal tumor or diverticulum.

Operation was performed on Jan. 17, 1951 (H. M. B.). The abdomen was opened through an upper right rectus "hockey-stick" incision. The liver, stomach, gallbladder, colon, and pelvic organs were normal. An active duodenal ulcer, 1 cm. in diameter, was found just distad to the pyloric ring, adherent to the under surface of the liver. A duodenal diverticulum about the size of a hen's egg was found projecting to the right from under the lateral margin of the duodenal curvature. (Fig. 2). The common duct was not dilated or thickened; it did not contain stones. Examination of the small bowel revealed a smaller jejunal diverticulum on the antimesenteric border of the jejunum about 2 in. (5 cm.) below the ligament of Treitz. The lateral peritoneal reflection was incised and the duodenum mobilized and rolled medially. The diverticulum was dissected and freed from the surrounding retroperitoneal connective tissue. The neck of the sac was found to enter the duodenum on the posterior wall of the second portion in the usual location of the ampulla of Vater. The terminal portion of the common duct, however, entered the diverticulum about 1.5 cm. above this point. The neck of the sac was divided between clamps flush with the duodenal wall,

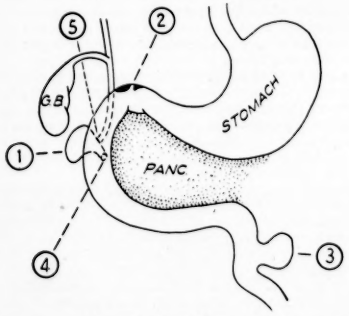

Fig. 2.—Diagram showing jejunal and duodenal diverticuli with common duct entering the latter. (*1*) Duodenal diverticulum; (*2*) duodenal ulcer; (*3*) jejunal diverticulum; (*4*) entrance of diverticulum into duodenum; (*5*) entrance of common duct into diverticulum.

and the duodenal defect was closed by interrupted silk sutures. The common duct was then divided near its attachment to the diverticulum, and the diverticulum was removed. A 70% partial gastrectomy was then done, and after resection the common duct was anastomosed to the cut end of the duodenal stump over a small rubber catheter which had previously been inserted into the duct at a higher level. As a precautionary measure, the gallbladder was anastomosed to the duodenum at a lower level. Intestinal continuity was then reestablished by a posterior Polya anastomosis at the site of the jejunal diverticulum, which was removed in making the anastomosis (Fig. 3). Two Penrose drains and the small biliary catheter were brought out through a right lateral stab wound; the abdomen was closed in layers.

Examination of the surgical specimen revealed a thin-walled sac about 2½ in. (6 cm.) in diameter filled with bits of hair, vegetable fiber, and barium. The inner wall of the sac was somewhat trabeculated, containing sharply demarcated punched-out

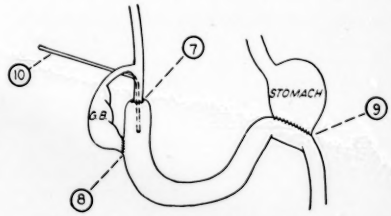

Fig. 3.—Postoperative anatomic relations of gallbladder, common duct, and duodenum: (*7*) anastomosis between common duct and cut end of duodenal stump; (*8*) cholecystoduodenostomy; (*9*) gastrojejunostomy; (*10*) biliary catheter.

defects, which were probably secondary diverticula. The mucosal lining was that of the duodenum, but the sac lacked a serosal layer.

The postoperative course was uneventful. Nasogastric suction was maintained for five days; then fluids and foods by mouth were gradually increased. The common duct tube was clamped intermittently and finally removed on the 16th postoperative day. The patient was dismissed from the hospital on the 21st postoperative day. Subsequent examinations revealed the patient to be in good health.

COMMENT

Since 65% of all duodenal diverticula occur in the second portion of the duodenum near the ampulla of Vater, it is surprising that entrance of the common bile duct into a duodenal diverticulum does not occur more frequently. Because of the silent nature of duodenal diverticula in general, and the difficulties in demonstrating their relationship to the ampulla, it seems probable that many of these anomalies are overlooked. The lesions in all six cases previously reported were discovered only after painstaking effort—five by autopsy and one by repeated cholecystograms. The symptoms in this case were minimal; exploration was finally advised because of the possibility of a duodenal tumor. Ordinarily the ulcer would have been treated first by a medical regimen.

It is interesting to speculate on the relationship between the ulcer and the diverticulum. It seems probable that the accumulation of bile in the diverticulum may have interfered with the proper neutralization of the gastric juices in the first portion of the duodenum, making the mucosa in that area more susceptible to autodigestion and ulceration.

SUMMARY

An unusual case of a common bile duct entering a duodenal diverticulum and an associated duodenal ulcer is reported. To our knowledge this is the first reported case in which this condition was recognized at surgical exploration and successfully repaired.

Owen and W. Broadway (Dr. Swanberg).

CALCINOSIS DUE TO TREATMENT OF DUODENAL ULCER

Joseph M. Miller, M.D.
Irving Freeman, M.D.
and
William H. Heath, M.D., Fort Howard, Md.

In 1949, Burnett, Commons, Albright, and Howard [1] reported six cases of hypercalcemia, calcinosis, and renal insufficiency, without hypercalciuria or hypophosphatemia, in patients with a history or symptoms of peptic ulcer, who had received excessive amounts of milk and absorbable alkali. The following case demonstrates many of the features of this syndrome.

REPORT OF A CASE

A 41-year-old white man was admitted to the Veterans Administration Hospital, Fort Howard, Md., on June 26, 1949, complaining of weakness, nausea, and vomiting, of three to four days' duration. He had noted epigastric pain in September, 1942, while in the United States Navy. Relief had been obtained from

Drawing of iris and limbus as region appeared through slit lamp. Calcium deposits from irregular crescents between 2 and 4 and 7 and 9 o'clock.

self-medication with about a quart of milk a day. He was admitted to a hospital while in service for pain and swelling of the left arm. While there he asked for sodium bicarbonate and milk to relieve his epigastric pain, and investigation revealed a duodenal ulcer. The patient was put on a Sippy No. 1 diet in September, 1942, and then progressively advanced to other ulcer diets until January, 1943, when he was discharged from the Navy because of his duodenal ulcer.

The patient returned to his civilian occupation and continued to eat a modified diet, but since he was not under the care of a physician, the nature of the modifications could not be determined. He remained fairly well until March, when he experienced a return of mild epigastric pain. His milk consumption at that time averaged about four to five glasses a day, and he took about ½ teaspoon of sodium bicarbonate every night and sometimes twice a night. By the winter of 1944 he was taking at least one teaspoon of sodium bicarbonate twice a day. In December of 1948 extreme weakness, syncope, and the passage of tarry stools over a period of one week was noted. Rigid adherence to his diet afforded relief.

A review of the patient's past history did not reveal anything unusual. There was no history of scarlet fever, frequent sore throats, facial edema, hematuria, oliguria, nocturia, headache, or visual disturbance.

Physical examination revealed a moderate degree of tenderness in the epigastrium. Numerous plaque-like formations were found in the adjacent conjunctiva just below the epithelium (Fig.). The fundi were normal. With the slit lamp, a heavy deposit of calcium in the medial and lateral margins of both corneas was seen, the accumulation being heaviest in the limbus. Band keratitis was not present.

A moderate degree of anemia was found. The urine was alkaline, with a specific gravity of 1.001, and contained a trace of albumin and 2 to 3 erythrocytes per high power field. The serum calcium level was 9.2 mg. per 100 cc.; the chlorides, 380, and the phosphorus, 4.8. The carbon dioxide combining power was 77 vol. %, and the alkaline phosphatase was 4.8 units per 100 cc. A roentgenogram of the lungs revealed a fibrocalcific area in the upper lobe of the right lung. A roentgenologic skeletal survey was normal.

The patient was placed on a strict Sippy diet, and aluminum hydroxide and tincture of belladonna were administered to the point of tolerance. Rapid relief from symptoms was obtained. On July 7, 1949, the serum calcium level was 11.5 mg. per 100 cc.; the phosphorus, 3.2, and the chlorides, 460. The carbon dioxide combining power was 44 vol. %. Urinalysis was essentially the same as upon the previous occasion. A gastrointestinal series revealed a deformity of the duodenal cap and a moderate amount of gastric retention. A mottled, dense area of calcification lay just above the transverse process of the fourth lumbar vertebra.

Aspiration of fasting gastric contents on three occasions yielded 200 to 300 cc. of fluid containing 34 to 74 degrees of free hydrochloric acid. Tubercle bacilli could not be isolated from the gastric contents. Repeated determinations of the nonprotein nitrogen content of the blood revealed a value as high as 232 mg. per 100 cc. The two-hour output of sulfobromophthalein was 22.5%. The retrograde pyelogram was normal.

In this case a definite, prolonged history of the intake of milk and absorbable alkali was obtained. Calcinosis was manifested by deposition of calcium in the eyes and in the lumbar region. Hypercalcemia, normal serum phosphorus and serum alkaline phosphatase levels, mild alkalosis, and a severe degree of renal impairment were found.

The treatment of choice for this patient was partial gastrectomy to cure the duodenal ulcer, although the risk of operation was greater than normal. A satisfactory decline of the value for nonprotein nitrogen in the blood was noted during the period preparatory for operation. A partial gastrectomy was done on Aug. 17. The postoperative course was uneventful, and the patient was discharged on Sept. 9.

The patient was readmitted on Nov. 25 because a follow-up roentgenogram of the lungs revealed a small area of infiltration in the left first interspace. He had not experienced symptoms from the duodenal ulcer in the interim. The ocular calcific deposits were still present. The serum calcium level was 11.6 mg. per 100 cc.; the phosphorus, 3.4, and the nonprotein nitrogen, 38. The urine contained a trace of albumin, rare white blood cells and occasional granular casts. Concentration of the urine to a maximum specific gravity of only 1.013 could be obtained. The sulfobromophthalein excretion was 40% in two hours. Repeated gastric washings did not yield tubercle bacilli.

Results of treatment for pulmonary tuberculosis were good. Over a period of four months the patient gained 7.3 kg. (16 lb.) in weight. His temperature and pulse rate were normal. Toward the end of this period, the two-hour excretion of sulfobromophthalein increased to 53%. The maximum specific gravity of the urine was 1.013. The serum calcium level was 10 mg. per 100 cc.; the phosphorus, 4, and the nonprotein nitrogen, 46.5. No change occurred in the ocular deposits of calcium. The patient was discharged on March 31, 1950, to be followed by his local physician.

After the treatment described, improvement in renal function occurred, as evidenced by the return of the nonprotein nitrogen

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. Burnett, C. H.; Commons, R. R.; Albright, F., and Howard, J. E.: Hypercalcemia Without Hypercalcuria or Hypophosphatemia, Calcinosis and Renal Insufficiency, Syndrome Following Prolonged Intake of Milk and Alkali, New England J. Med. **240**: 787-794 (May 19) 1949.

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to normal limits and the increased excretion of sulfobromophthalein in two hours. Residual renal damage was demonstrated by the persistent low maximal specific gravity of the urine. The value for the serum calcium returned to normal. Calcium deposition in the eyes and in the lumbar region was not altered.

SUMMARY

A case of abnormal calcium deposition and hypercalcemia due to prolonged treatment of a duodenal ulcer with milk and absorbable alkali is reported. The duodenal ulcer was successfully treated by a gastric resection. There was concurrent improvement in renal function.

Veterans Administration Hospital (Dr. Miller).

HYPEROSTOSIS FRONTALIS INTERNA

TWO CONTRASTING CASES

Sherwood Moore, M.D.
and
Archie D. Carr, M.D., St. Louis

It is assumed that the reader is familiar with the salient features of hyperostosis frontalis interna; therefore, discussion of the condition and its accompanying symptom complex will be omitted. A full description can be found in Henschen's classic monograph, "Morgagni's Syndrome."

The two case histories briefly given here are interesting because of their unusual courses, and the variation of development of the hyperostosis.

REPORT OF CASES

CASE 1.—The first patient was admitted to the Barnes Hospital in March, 1928. She was a thin, white, 22-year-old married woman, complaining chiefly of a severe headache. On examination a doubtful nystagmus and a slight bilateral increase of the patellar reflexes were observed. Lumbar puncture disclosed no abnormalities. The late Prof. Sidney Schwab suggested the diagnosis of toxic irritation of the nervous system (frequently the symptoms associated with hyperostosis frontalis interna resemble those of mild chronic intoxication). A diagnosis of encephalitis was made, which was questionable. The patient was readmitted in November, 1936, for recurring upper respiratory infection and headache. At this time, there was nothing notable in the

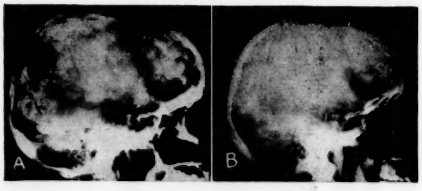

Fig. 1 (Case 1).—*A*, the skull in 1928. *B*, the skull in 1950.

history. The patient entered the hospital again in April, 1940, for recurring upper respiratory infection and dizzy spells, which had been occurring for six weeks, and which had caused her to fall. She was admitted a fourth time in February, 1944, for hysterectomy for toxemia of pregnancy. There was a macrocytic, hyperchromic anemia, paresthesias, and slight incoordination of the extremities.

The fifth and last admission was in January, 1950. In the interim, the patient's health had been fairly good. She entered because of a series of severe headaches, frontal and vertex in type, of sudden onset, and of one hour's duration. These had been accompanied by an intense sense of fear and a rise in blood pressure to 200+ mm. Hg, followed by tenderness over the scalp lasting for several days. There was a complicating, severely painful subdeltoid bursitis with calcification on the left, and slight pain in the corresponding region of the right side. There were no other well-defined objective findings, except those in the roentgenograms of the skull.

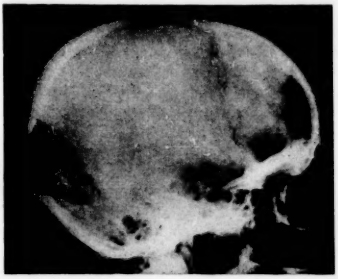

Fig. 2 (Case 2).—The skull.

The roentgen examination in 1928 (Fig. 1A) was reported as showing circumscribed areas of increased density in the frontal bone, with thickening of the orbital plate. At that time we had no knowledge of the condition now so widely known as hyperostosis frontalis interna. The syndrome consists of a more or less constant combination of headache, obesity, and functional disorders of the central nervous system. In women it is sometimes associated with a male distribution of facial hair-growth; this sign was absent in both cases reported here.

The roentgenogram made in 1950, 22 years later (Fig. 1B), showed the nodules of hyperostosis frontalis interna still present, combined with a diffuse hyperostosis of the vault of the skull. In the first film the orbital plate of the frontal bone was greatly thickened, whereas in the second film it was of normal thickness. At neither examination was there alteration of the sella turcica.

CASE 2.—The second patient, a Negro woman, 55, has been under observation for approximately three years. She reported to the clinic because of intense, constant headaches, which she had experienced since the birth of her child eight years before. The objective findings were obesity and an extensive hypertrophic arthropathy of both knee joints, probably caused by her excessive weight: 311 lb. (141 kg.+). She was an unstable person but lacked any well-marked psychic deviation. At the first examination roentgenograms of the skull showed nothing abnormal except a slightly enlarged, or "balloon" sella turcica.

There was no evidence of hyperostosis. Three years later however, well-defined hyperostosis frontalis interna was apparent (Fig. 2). This observation confirms the opinion of Dr. Carr that roentgen demonstration of hyperostotic changes in the skull is not essential to the diagnosis of metabolic craniopathy, the inclusive term for the four types of hyperostosis.

COMMENT

Here are two strongly contrasting cases: one a thin, 22-year-old white woman, and the other an enormously obese Negro woman 55 years of age whose symptoms began about the time of the menopause. Many writers are of the opinion that hyperostosis frontalis interna is a physiological process incident to the menopause. The first case study refutes this opinion, as does the fact that the condition, though rare, may be found in the male.

Professor Emeritus of Radiology (Dr. Moore), and Assistant Professor of Clinical Neurology (Dr. Carr), Washington University School of Medicine

The eldest of these patients was thought to have a pituitary obesity. In a period of three years, a readily demonstrable hyperostotic change in the skull developed.

The first patient was under observation for an unusually long time. A progressive change occurred in the vault of the skull, which almost doubled in thickness and manifested a combination of hyperostosis frontalis interna and hyperostosis calvariae diffusa. But there was also regression of the thickening of the orbital plate of the frontal bone until it was normal in thickness. This phenomenon is difficult to explain. The structure thins at the center with advancing years, both in persons with hyperostosis and in normal persons, as shown in Figure 3. No other regressive changes of similar nature have been found elsewhere in the skull in some 700 varying cases of hyperostosis.

The patients in this report had certain features in common. Both were chronic invalids who suffered from intense headache and had demonstrable abnormal changes in the skull, which were progressive in character. Neither patient had a male type of hairgrowth.

In conclusion, it can be said that hyperostosis frontalis interna (Morgagni's syndrome) frequently is baffling in the inconstancy of the signs and symptoms and requires

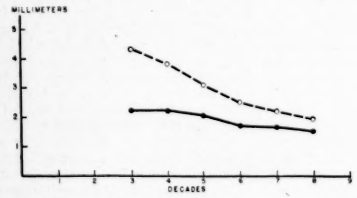

Fig. 3.—Progressive decrease in orbital plate thickness with advancing years. The broken line represents 114 patients with hyperostosis frontalis interna; the solid line, 813 control patients.

an extended period of observation to establish an accurate diagnosis. The condition is never fatal, but the outlook for the unfortunate subject is at best mild invalidism, at worst psychosis.

510 S. Kingshighway (Dr. Moore).

Prophecy of Antibiotics from the Soil.—Bacteria pathogenic for man and animals find their way to the soil, either in the excreta of the hosts or in their remains. If one considers the period for which animals and plants have existed on this planet and the great numbers of disease-producing microbes that must have thus gained entrance into the soil, one can only wonder that the soil harbors so few bacteria capable of causing infectious diseases in man and in animals. One hardly thinks of the soil as a source of epidemics. What has become of all the bacteria causing typhoid, dysentery, cholera, diphtheria, pneumonia, bubonic plague, tuberculosis, leprosy, and numerous others? . . . The soil was searched for bacterial agents of infectious diseases, until the conclusion was reached that these do not survive long in the soil. It was suggested that the cause of the disappearance of these . . . organisms in the soil is to be looked for among the soil-inhabiting microbes, antagonistic to the pathogens and bringing about their rapid destruction in the soil.—Selman A. Waksman, address to National Academy of Sciences, Washington, D. C., April 18, 1940, Biological Aspects of Antibiotics, Frontiers in Medicine, New York, Columbia University Press, 1951, p. 101.

AGRANULOCYTOSIS IN A PATIENT TREATED WITH MERCURIAL DIURETICS

Jacob J. Silverman, M.D.
and
Joseph F. Worthen, M.D., Staten Island, N. Y.

Mercurial diuretics are of prime importance in the management of congestive circulatory failure. Since the introduction of organic mercurial diuretics in 1920,[1] an extraordinarily large number of patients have been treated successfully by mercurial diuretics, with relatively few serious reactions. Nevertheless, undesirable and toxic effects, including fatalities, are occasionally reported. The purpose of this report is to record the development of a profound neutropenic state in a patient under treatment with mercurial diuretics for congestive circulatory failure.

REPORT OF CASE

A 59-year-old white businessman was admitted to the Staten Island Hospital Sept. 13, 1950, because of progressive weakness of two months' duration. The patient had been admitted to this hospital on two previous occasions in the preceding year for congestive circulatory failure for treatment of arteriosclerotic heart disease and the Kimmelstiel-Wilson syndrome. He had had diabetes for 10 years, which was controlled by both diet and insulin. His diet was carefully adjusted and in the preceding year had contained less than 1 gm. of salt a day. He was receiving a daily maintenance dose of digitalis and received parenteral injections of mercurial diuretics, the frequency and amount depending on the fluctuations of his weight record. In the year preceding he had received a total of 82 intramuscular injections of mercaptomerin (thiomerin®) sodium in 1-2 cc. doses once or twice a week, either subcutaneously or intramuscularly, until six weeks before his admission to the hospital, when marsalyl and theophylline (solution salygran®-theopylline) had been substituted. The latter drug had been given in 2 cc. doses on the average of once every eight days for a total of five injections. During his first hospitalization, one year previously, meralluride injection ("mercuhydrin") had been used intravenously on two occasions. With this dehydrating program, the patient's condition had been satisfactory, until an infection of the gums developed approximately six weeks before his admission to the hospital. This infection had resisted local treatment and had been attributed to recent dental extractions. There had been a low-grade fever and an occasional chilly sensation. Weakness, lethargy, and easy fatigability had soon dominated the clinical picture. Because of the unusual weakness, it was thought that possibly a salt depletion syndrome was developing, as a result of the vigorous use of mercurials.

On admission to the hospital the patient was bedridden but not particularly short of breath. The nutritional state was poor. The oral temperature was 99 F, the pulse 88 per minute, and respirations 20 per minute. The skin and mucous membranes were pallid. The teeth were missing, and the gums were covered by a thick, dirty, grayish membrane interrupted by several ulcerations. Portions of this membrane could be dislodged, but no pus was visible. The chest was symmetrical. There was flatness over the base of the right lung posteriorly, and the breath sounds were absent in this area. The heart sounds were regular and of normal quality. There was a grade 2 systolic murmur over the apical area. The blood pressure was 132 mm. Hg systolic and 95 diastolic. The dorsalis pedis, posterior tibial, and right radial pulsations were not felt. The liver edge was palpable, but not

From the Medical Service, Staten Island Hospital.

Dr. Solomon Estren, of Mount Sinai Hospital, Hematology Department, New York City, gave us suggestions on this manuscript, and Dr. Vladimir Altman, pathologist, Staten Island Hospital, Staten Island, New York, performed the bone marrow studies.

1. Saxl, P., and Heilig, R.: Ueber die diuretische Wirkung von Novasurol und anderen Quecksilberinjektionen, Wien. Klin. Wchnschr. **33**: 943, 1920.

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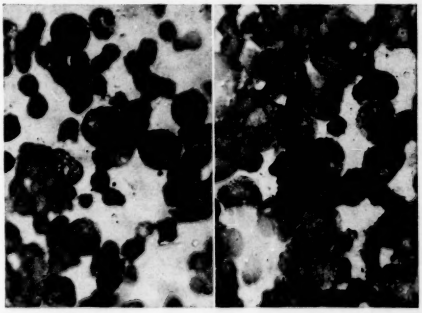
tender, 2 fingerbreadths below the costal margin. The spleen was not palpable. There was no obvious peripheral edema. The eyes showed a corneal arcus. Funduscopic examination disclosed many tiny, yellow, and hemorrhagic areas of exudate. There was marked tortuosity, narrowing, and irregularity of the arterioles. The discs were normal.

The most striking laboratory observations on admission were found in the blood. The peripheral white blood cell count was 4,500, with an almost complete absence of neutrophils. There was also a slight hypochromic anemia. The platelets numbered 380,000 per cubic millimeter. A sternal bone marrow study was also abnormal, disclosing a preponderance of neutrophilic myelocytes. It was interpreted as showing a maturation arrest of the myeloid series (See figure). The results of peripheral blood and bone marrow examinations at various intervals during the patient's hospitalization are shown in Tables 1 and 2. The urinalyses were characterized by a heavy trace of protein and a specific gravity of not more than 1.016. Microscopic examination disclosed many hyaline, fine, and coarse granular casts. Urinary tests for sugar were negative, and there was no Bence-Jones protein in the urine. The serum chloride value was 534 mg. per 100 cc.; serum cholesterol 422 mg. per 100 cc.; serum protein 4.7 gm., with the albumin 2.05 gm. and the globulin 2.65 gm. per 100 cc.; fasting blood sugar was 70 mg., and the blood urea 49 mg. per 100 cc. A blood Kahn test for syphilis was negative. An electrocardiogram indicated a depression of the RS-T segment and inverted T wave in the standard leads. These findings were interpreted as indicating digitalis effects superimposed on myocardial ischemia. A roentgenogram of the chest showed evidence of a small amount of fluid in both pleural cavities. The heart was moderately enlarged in all of its diameters.

It was now apparent that the patient was suffering from a blood dyscrasia. Therapy was therefore directed toward this disturbance. A whole blood transfusion of 400 cc. was slowly administered, and three smaller transfusions of 250 cc. each were given over the next 10 days. In addition, the patient received 400,000 units of procaine penicillin and five units of crude liver extract intramuscularly each day. Since mercury was suspected as a possible cause for the blood disturbance, the use of mercurial diuretics was discontinued, but the administration of all other medications used prior to admission (digitalis, multivitamin capsules, morphine injection, and pentobarbital sodium) was continued. Improvement was soon observed in the peripheral blood (Table 1). The white cell blood count rose to 8,000 per cu. mm., the neutrophils, from almost total absence, rose to 61%, and the hemoglobin from 10.5 gm. to 16 gm. per 100 cc. In spite of this hematologic improvement, however, the problem of congestive circulatory failure remained. There was increased difficulty in breathing, and edema of the lower extremities was now evident. In the past, the patient had always responded with good diuresis following an injection of a mercurial. With some hesitation, realizing the risk of an allergic reaction, it was decided to continue this treatment but to avoid the particular kind of mercurial diuretic used just prior to admission. Accordingly, meralluride injection was administered in 1 cc. doses intramuscularly on Oct. 3 and Oct. 4, 1950. The temperature promptly rose to 101 F, and the patient was unusually restless and irritable. The peripheral blood on Oct. 6 showed a white blood cell count of 3,200 per cu. mm. with 6% neutrophils. The red blood cell count was normal, and the hemoglobin was 15.3 gm. per 100 cc. It should be pointed out that the blood cell count a few days before the administration of the meralluride injection showed a white cell count of 8,000 per cubic millimeter with 45% neutrophils, and it should be emphasized that no other new medication, except the meralluride injection, was added during this period. Further blood counts over the next few days showed a prompt return to normality (Table 1). The circulatory state, however, remained poor, and on Oct. 9, three and one-half weeks after admission, the patient suddenly went into left ventricular heart failure. He became ashen gray; the pulse was rapid and thready. Oxygen and morphine were administered, and the digitalis was increased. Although he gradually recovered from shock, there was further evidence of advanced congestive failure. On Oct. 17 mercaptomerin was administered subcutaneously in a dose of 1 cc. The peripheral blood showed no significant changes, but the patient's general condition seemed somewhat improved. He was afebrile. After the last injection of mercaptomerin, a fair diuretic response was observed, but his general condition was still not satisfactory. He left the hospital against advice on Oct. 20, and died of heart failure at home on Oct. 24. Autopsy was not performed.

COMMENT

Considering the importance and widespread use of the organic mercurial compounds, it is surprising that there have been only isolated observations of the bone marrow in patients receiving this heavy metal. Agranulocytosis has been reported to follow the administration of such metals as gold, radium, arsenic, arsphenamine, neoarsphenamine, bismuth, radium, and radioactive substances.[2] The bone marrow apparently becomes sensitized to these metals and acts as a shock organ. Various patterns of the bone marrow have been described by different observers in agranulocytosis. Fitz-Hugh and Krumbhaar [3] first called attention to the hyperplastic state of the bone marrow, with arrest of cell development at the myelocyte level. They used the term "maturation arrest" to describe this condition. Occasionally, however, an aplastic marrow is found, especially in fatal cases. As



Photomicrograph of bone marrow showing a preponderance of myelocytes, the so-called maturation arrest stage (× 234).

Dameshek pointed out,[2a] the different patterns described in the bone marrow are probably due to the variations in the severity of the disease and to the fact that the observations of the marrow were made at different times in the course of the disease.

A chronically ill patient receiving treatment for congestive circulatory failure is usually exposed to a multitude of medications. If in such a patient agranulocytosis develops it is not always easy to discover which drug is responsible. Agranulocytosis following the administration of the mercurial diuretics is extremely rare, and to date there has been only one experience reported.[4] Because of this rarity the causal role of the mercurial diuretics was not considered in our patient until he was

2. (*a*) Dameshek, W.: Agranulocytosis, Oxford Medicine, New York, Oxford University Press, 1949, vol. 2, chap. 22a, p. 848. (*b*) Kracke, R. R., and Garver, H. E.: Diseases of the Blood and Atlas of Hematology with Clinical and Hematologic Descriptions of the Blood Diseases Including a Section on Technic and Terminology, chap. 12, Philadelphia, J. B. Lippincott Company, 1937.

3. Fitz-Hugh, T., Jr., and Krumbhaar, E. B.: Myeloid Cell Hyperplasia of the Bone Marrow in Agranulocytic Angina, Am. J. M. Sc. **183**: 104, 1932.

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admitted to the hospital. The common causes of agranulocytosis, such as sensitivity to the aminopyrine or sulfonamides, were carefully considered, but there was no history of any recent exposure to these drugs. Of course, the patient may have taken some aminopyrine compound without our knowledge, but we believe this to be unlikely, since all the medication was dispensed under the guidance of either a physician or a nurse. In this case, a relationship to the mercurial diuretics seemed plausible for the following reasons. On admission to the hospital, when the patient showed profound neutropenia, the only drug that was discontinued was the mercurial diuretic. A prompt recovery followed. This improvement was, of course, probably enhanced by the blood transfusions and antibiotics. Later, when the blood was again normal, a mercurial diuretic was administered. A dramatic drop of the neutrophils was again demonstrated. There was also an associated general body reaction, with a slight rise in temperature.

reduction of the neutrophils is diagnostic of agranulocytosis. Usually there is little or no anemia, and the platelets are normal. However, since such patients are chronically ill, an unrelated mild anemia may be present.

Three types of mercurial diuretics were used in our patient to promote diuresis, namely mersalyl and theophylline injection, meralluride injection, and mercaptomerin sodium. The neutropenia was observed while the patient was receiving mersalyl and theophylline injection and again demonstrated after the use of meralluride injection, but it was not seen when mercaptomerin sodium was prescribed. Mercaptomerin sodium had been used successfully almost continuously for one year. Chemically, mercaptomerin sodium differs from the other two preparations in that the theophylline radical is replaced by a mercaptide. It is interesting to note that experimentally, mercaptomerin sodium has been found to be 160 to 200 times less toxic when administered intravenously in animals.[5]

TABLE 1.—*Peripheral Blood Cell Counts During Hospitalization*

Date	Hgb.,* Gm./ 100 Cc.	RBC (× 10⁶)	WBC	Segmented Polymorphonuclears	Band Cells	Myelocytes	Lymphocytes	Monocytes	Eosinophils	Basophils	Remarks †
9/13	10.5	3.8	4,500	2	2	..	76	19	..	1	Mercurial diuretics
9/14	11.9	4.0	4,100	5	2	12	67	14	..	..	omitted; antibi-
9/18	14.6	4.6	5,500	7	1	6	59	27	..	..	otics, liver extract,
9/20	14.3	4.6	5,300	19	7	2	53	18	..	..	and four trans-
9/25	16.0	4.8	7,500	50	11	..	30	9	..	..	fusions admin-
10/ 1	15.8	5.04	8,000	44	1	..	42	12	1	..	istered
10/ 3	....	...	.....	..	..	..	..	..	..	..	1 cc. meralluride administered
10/ 4	....	...	.....	..	..	..	..	..	..	..	1 cc. meralluride administered
10/ 6	15.3	5.02	3,200	6	..	..	94	..	..	..	.....
10/ 9	....	...	24,000	72	22	..	6	..	..	..	.....
10/11	15.8	4.8	14,600	87	3	..	10	..	..	..	.....
10/14	11.8	4.2	29,400	78	15	..	17	..	..	..	.....
10/17	11.8	4.0	13,500	87	2	..	10	..	1	..	1 cc. mercaptomerin administered
10/18	11.8	4.0	.....	70	20	..	2	..	8	..	.....
10/19	11.8	...	13,000	75	5	..	17	..	..	..	.....
10/20	13.2	4.0	14,500	73	3	..	20	..	1	1	Died 10/24/50

* Photoelectric technique. † Platelet count 9/13/50: 380,000 per cubic millimeter.

The outstanding symptoms in our patient were the debilitating fatigue and malaise. In a patient receiving mercurials, these symptoms may direct the clinician to the possibility of a salt depletion syndrome. The high temperature and acute sore throat commonly present in agranulocytosis were not present in our patient. The importance of doing routine blood cell counts in such a case is obvious. Regardless of how recently a blood cell count has been taken, this study should be repeated if unusual weakness or signs of sepsis develop. A marked

The various untoward effects observed after administration of mercurial diuretics follow no set pattern and are caused by several mechanisms. Clinically, a wide variety of reactions have been observed.[6] Acute mercurial poisoning is extremely rare.[7] The immediate fatal

TABLE 2.—*Bone Marrow Counts*

	Sept. 16	Oct. 19
Promyelocytes	1	0
Myelocytes	38	5
Metamyelocytes	6	6
Band cells	3	21
Polymorphonuclear neutrophils	1	36
Eosinophils	0	1
Basophils	1	1
Lymphocytes	24	15
Normoblasts	22	12
Pronormoblasts	1	2

reactions occasionally reported apparently result from a direct toxic effect of mercury on the heart. Such fatalities follow the intravenous route of administration, and for this reason intravenous injections of the mercurials should be used with extreme caution. The commoner reactions from the mercurial diuretics result from the

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mobilization of digitalis, water, and electrolytes. The salt depletion syndrome may result from a too vigorous dehydrating program.[8] A number of reactions also result from an allergic response to a specific organic compound. Many nonfatal reactions, such as urticaria, dermatitis, fever, and bronchial asthma, may be examples of this type of response.[9] Changing from one preparation to another is often sufficient to abolish the reaction, but not necessarily so. In this regard, Fox, Gold, and Leon [9b] described an allergic disturbance following the intravenous use of mercurophyllin injection (mercupurin,® now known as mercuzanthin®) and again following use of a mercurophyllin suppository. Only mild reactions, however, were encountered after use of mersalyl and inorganic mercurials.

Because of the beneficial effects of dimercaprol injection (BAL) in arsenic and mercury poisoning, Bender, Hoxsey, and DeMarsh [1] used it in the treatment of a patient with neutropenia following mercurophyllin administration. A striking improvement was noted in both the peripheral blood and the bone marrow following the use of dimercaprol. However, since agranulocytosis sometimes responds favorably once the offending drug itself is discontinued, one cannot be positive of the role of dimercaprol in effecting the response. Moreover, the reaction is more in the nature of an idiosyncrasy than direct mercurial poisoning.

SUMMARY AND CONCLUSIONS

An unusual depression of the white blood cells is reported in a patient under treatment for congestive circulatory failure with mercurial diuretics. Mersalyl and theophylline injection (solution salgyran®-theophylline) and meralluride injection ("mercuhydrin") were believed to be responsible for this reaction, which was not observed following the use of mercaptomerin (thiomerin®) sodium. At the height of the disorder, the peripheral blood was characterized by severe neutropenia and the bone marrow by a maturation arrest of the granulocyte series at the myelocyte stage. The mercurial diuretics should be added to the list of drugs capable of producing agranulocytosis.

100 Central Ave. (Dr. Silverman).

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Aureomycin and the Intestinal Flora.—The diarrhea observed in patients treated with aureomycin for a period of three or more days may not be a toxic manifestation of the drug, but rather an expression of the profound effect this drug has on the intestinal flora. In this respect it is similar to terramycin, or for that matter, any combination of chemotherapeutic agents that are markedly active against both gram-positive and gram-negative aerobic and anaerobic bacteria of which the intestinal flora are comprised. Oftentimes, patients treated with these broad spectrum antibiotics for a period of three days or more show nothing but pure cultures of yeast in their stools. Not infrequently the stools become loose, lose their normal odor, and the patient complains of pruritus ani. The latter is probably due to the abnormal shift of the bacteria flora to the acid-producing yeasts.—Henry Welch, M.D., Pharmacology of Antibiotics, *Journal of the History of Medicine and Allied Sciences*, Summer, 1951.

GENERALIZED URTICARIA WITH ELECTROCARDIOGRAPHIC CHANGES SIMULATING MYOCARDIAL INFARCTION

Robert F. Foster, M.D.
and
James D. Layman, Jr., M.D., Seattle

A review of the literature reveals that acute cardiac manifestations in association with urticaria are uncommon; however, it has been observed that definite cardiac changes may accompany allergic reactions. The report of the following case illustrates electrocardiographic changes simulating myocardial infarction that occurred during the course of urticaria.

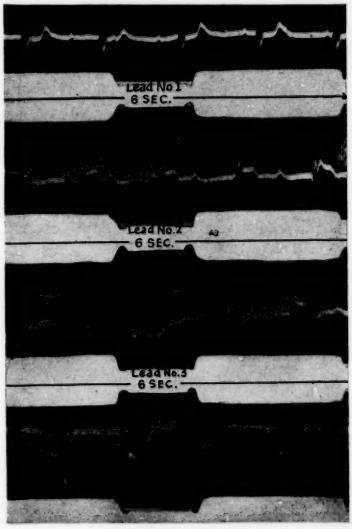

Fig. 1.—Electrocardiogram in case reported on admission of patient.

REPORT OF A CASE

History.—A white woman, 65, entered Providence Hospital on April 13, 1946, with the complaint of shortness of breath and hives. For the preceding two weeks her family physician had treated her with intravenously administered "cincosal" (sodium cinchophen, 1 gm., sodium salicylate, 1 gm., and sodium iodide, 0.5 gm., in 20 cc.) for arthritis. The contraindications to the use of "cincosal" are stated to be impaired heart action, syphilis, liver impairment or susceptibility to liver disease, tuberculosis, or thyroid disease. This was the only medication. Seven days before admission she noted itching of the scalp followed by a rash at the hairline. On the same day she was vaccinated for smallpox, and hives later developed over the entire body. "Cincosal" injections were continued. On the day of admission she suddenly experienced shortness of breath but had no chest pain or discomfort. The past history was noncontributory, and there had been no allergic manifestations in the past.

Clinical Observations.—Examination revealed a dyspneic, obese and cooperative white woman with a temperature of 98 F. The blood pressure was 140/90 and pulse 80, regular. There was

From the Department of Cardiology, Providence Hospital.

a generalized urticarial rash of moderate intensity on the arms and trunk. The chest was symmetrical, with equal bilateral expansion. There was slight dulness and rales in the bases posteriorly. The heart tones were good. The heart size could not be determined on physical examination because of obesity and large breasts. The abdomen was normal except for pronounced obesity. Otherwise the general examination was essentially normal.

Laboratory Data.—Initial laboratory tests revealed hemoglobin 82.7% (12 gm.), erythrocytes 4,080,000, leucocytes 8,100, polymorphonuclear neutrophls 73%, eosinophils 2%, lymphocytes 19%, and monocytes 6%. A voided urine specimen showed a specific gravity of 1.021, pH 7.9, no sugar or albumin, pus cells 2 to 4 per high-power field, along with a few epithelial cells, bacteria, and amorphous material. A miniature roentgenogram of the chest, taken April 16, 1946, was reported negative, and a Graham-Cole test, taken April 14, 1946, revealed a normally functioning gallbladder. An electrocardiogram (Fig. 1) taken on the second day after admission indicated complete auriculoventricular dissociation, with an auricular rate of 94 and ventricular rate of 50. The QRS intervals measured 0.12 second with pronounced deformity; the T waves in lead 2 were monophasic and in leads 3 and 4 inverted, with elevation of the ST segments; Q waves were present in leads 2 and 3. It was concluded that there was third-degree heart block with dissociation of auricles and ventricles, and intraventricular blocking with features suggesting myocardial infarction posterior type, atypical. The tentative diagnosis of the attending physician and a consultant was painless coronory occlusion.

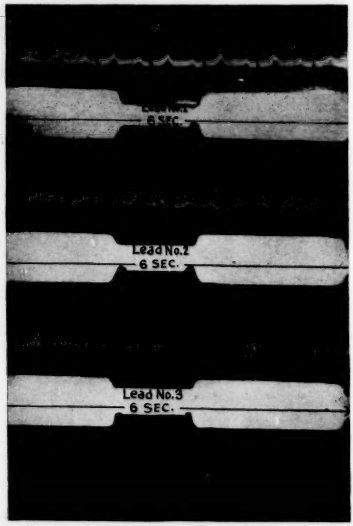

Fig. 2.—Electrocardiogram in case reported 14 days after admission.

Course.—On admission the patient was treated by bed rest, aminophylline, ammonium chloride, and dihydromorphinone (dilaudid®) hydrochloride. The rash disappeared on the third day after the patient's admission. The dyspnea persisted intermittently for six days. The patient complained of chest pain on one occasion and required dihydromorphinone. After the disappearance of dyspnea, the remainder of the course was entirely normal. Fourteen days after admission, and 12 days after the original electrocardiogram, another tracing (Fig. 2) indicated first-degree heart block, but was otherwise normal.

COMMENT

A review of the literature reveals little concerning cardiac manifestation of allergy. Pathologically it has been shown that allergic processes occur in and about cardiac vessels with eosinophilic infiltration, but this type may be histologically indistinguishable from processes of a different origin. In 1910 Auer and Lewis [1] showed that anaphylaxis could cause conduction disturbance in the heart of the guinea pig, and Auer and Robinson [2] in 1913 showed by animal experimentation that it could produce heart block with associated electrocardiographic changes. A similar mechanism could exist in man. Criep [3] in 1931, again working with animals, showed that asphyxia and anaphylaxis had the same effect on cardiac mechanism and that the changes in T waves were not unlike those found in coronary occlusion. He concluded that anoxemia might be the source of mechanism changes. Further, Wilcox and Andrus [4] proved that guinea pig hearts sensitized to horse serum, on exposure to a small amount of antigen, had reduced blood flow through the coronary arteries, thereby verifying Criep's conclusion.

There have been reports of arrhythmias of allergic etiology in man, one of the latest being by Lilienfeld and associates,[5] who discuss a case of acute myocarditis and right bundle branch block due to sulfonamide sensitivity. Paroxysmal tachycardia [6] and extrasystoles [7] have been shown to be associated with an allergic phenomenon in some cases. Sherman [8] stated that existence of a drug allergy could be determined by two criteria, namely, demonstration of antibodies and the occurrence of symptoms typical of allergic disease, such as asthma, rhinitis, urticaria, or contact dermatitis. The case discussed fulfils the criteria by the urticarial manifestations.

Although this patient had generalized urticaria and it might be assumed that she had a similar process in the heart, the electrocardiogram was interpreted as showing acute myocardial infarction. However, the fact that the electrocardiogram became normal, except for first-degree heart block, suggests that this was not acute myocardial infarction, since in the latter disease the electrocardiographic changes do not revert to normal for several weeks, months, or years. The majority of cases show permanent electrocardiographic evidence of previous myocardial infarction. In this case the electrocardiogram returned to approximately normal in 12 days, or eight days after the clearing of the rash and urticaria. The rapid disappearance of electrocardiographic changes also argues against the possibility that cinchophen had a direct toxic rather than an allergic effect on the myocardium, since recovery from toxic myocarditis is slow. It was felt, therefore, that the electrocardiographic manifestations where the result of a cardiovascular allergic reaction.

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4. Wilcox, H. B., Jr., and Andrus, E. C.: Anaphylaxis in the Isolated Heart, J. Exper. Med. **67**: 169, 1938.
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SUMMARY AND CONCLUSIONS

A case in which electrocardiographic findings suggested myocardial infarction associated with urticaria presumably due to drug hypersensitivity is reported. These electrocardiographic findings disappeared in 12 days. Therefore, it is concluded that this condition was not myocardial infarction but a manifestation of a cardiovascular allergic reaction.

1538 Medical-Dental Building (Dr. Foster).

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

RALPH E. DE FOREST, M.D., *Secretary.*

BECK-LEE CARDI-ALL ELECTROCARDIOGRAPH ACCEPTED

Manufacturer: Beck-Lee Corporation, 630 West Jackson Blvd., Chicago 6, Ill.

The Beck-Lee Cardi-All Electrocardiograph is a direct-writing instrument in which an electrically heated stylus traces on a heat-sensitive paper strip. Unpacked, the instrument measures 32 by 22 by 39 cm. (12½ by 8½ by 15½ in.) and weighs 12.4 kg. (27¼ lb.). Packed for domestic shipment, it measures 44 by 39 by 52 cm. (17½ by 15¼ by 20½ in.) and weighs 16 kg. (35 lb.). The foreign shipping weight is 30 kg. (67 lb.). Included in the above shipping weights are the following items: 1 patient cable, 1 power line cord, 1 ground wire, 1 tube of jelly, 1 set of electrodes, 1 set of electrode rubber straps, 1 roll of paper, 1 guarantee card, 1 instruction book, and 1 slip cover.

Beck-Lee Cardi-All Electrocardiograph

The instrument operates only on 60-cycle alternating current at a nominal voltage of 115; it will, however, operate within the range from 105 to 135 volts, and special modifications for other frequencies and voltages are available. It draws 1.2 amp.

Electrophysical and clinical trials of the instrument in laboratories acceptable to the Council gave evidence of satisfactory construction and performance. The Council on Physical Medicine and Rehabilitation voted to include the Beck-Lee Cardi-All Electrocardiograph in its list of accepted devices.

MINERALIGHT, MODEL SL 3660, ACCEPTED

Manufacturer: Ultra-Violet Products, Inc., 145 Pasadena Ave., South Pasadena, Calif.

The Mineralight, Model SL 3660, is a small source of ultraviolet radiation useful generally for the examination of small specimens of material, but especially designed for use in medical diagnosis. It operates on 50 to 60 cycle alternating current at 110 volts, and draws 9 watts of power. Unpacked it measures 30 cm. (11¼ in.) in length and weighs about 900 gm. (2 lb.). Prepared for shipment it measures 36 cm. (14 in.) in length and weighs 1.8 kg. (4 lb.).

The item under consideration, Model SL 3660, is so named because its burner tubing is made of Corning soda lime glass (internally coated with fluorescent powder) and because it has a Kopp Glass No. 61 filter, so that it delivers its maximum energy in the long ultraviolet region at about 3660 angstroms. It therefore should not cause erythema or dermatitis, and is to be distinguished from another model, SL 2537, which has its maximum output at about 2540 angstroms and is dangerous to the eyes. Both lamps are useful in mineralogy, and a differential effect between them helps to distinguish some minerals from others. The one designed for medical purposes is Model SL 3660. The Council obtained evidence from acceptable sources that this lamp is well constructed, that it gives radiation of wavelength and intensity suitable for use by dermatologists in recognizing hairs infected with Microsporon lanosum and M. audouini, and that it is useful to ophthalmologists for examining the cornea and conjunctiva. The Council on Physical Medicine and Rehabilitation voted to include the Mineralight, Model SL 3660, in its list of accepted devices.

Mineralight, Model SL 3660

KINOCYCLE ACCEPTED

Manufacturer: Kinocycle Company, 99 Prospect Hill Avenue, Summit, N. J.

The Kinocycle is a stationary bicycle, with flywheel and brake, on which the user experiences reciprocating motion of handlebars and seat as well as the usual rotating pedal movements. It offers both active and passive movement, since it can be actuated either by the patient's own efforts or by a motor. When unpacked and assembled for use, without the transformer, the apparatus measures 89 (height) by 130 by 65 cm. (35 by 51 by 25½ in.) and weighs 122 kg. (268 lb.). Packed for shipment it makes three crates as follows:

	Height	Length	Width	Weight
Kinocycle				
Metric	84 cm.	130 cm.	66 cm.	152 kg.
English	33 in.	51 in.	22 in.	334 lb.
Control Unit				
Metric	39 cm.	62 cm.	51 cm.	27 kg.
English	15½ in.	24¼ in.	20¼ in.	59 lb.
Transformer				
Metric	27 cm.	37 cm.	20 cm.	25.4 kg.
English	10½ in.	14½ in.	7¾ in.	56 lb.

The transformer is a 110/220 volt step-up autotransformer, and is used only when 220 volt alternating current is not available. The device requires a 50 to 60 cycle alternating current at 220 volts and draws 800 watts of power.

Kinocycle

The Council obtained evidence that this device was well made and worked as represented by the manufacturer, but that there was considerable divergence of opinion among physiatrists as to the benefits to be expected from its use. The consensus was that when used with care and discrimination under the direction of a qualified physiatrist it would provide both exercise and motivation for certain patients. The Council on Physical Medicine and Rehabilitation voted to include the Kinocycle in its list of accepted devices.

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WEIGHT CONTROL

The high incidence of obesity in the adult American population is a pressing medical problem; it has been called the most frequent physical abnormality appearing in routine examinations. A survey of existing statistics on body weight, data on normal men and women, secured from many diverse sources, suggests that from 20 to 40 per cent of those examined are 10 to 20 per cent overweight. The prevalence of body weights that are 10 per cent in excess of average weight for sex and height tends to increase with age. It is generally accepted that among obese persons the mortality rate is greater than in those in the normal range of body weight and that there is increased prevalence of, and death from, degenerative diseases, with obesity. Attention has frequently been called to life insurance statistics showing that diabetes and obesity are closely tied together, and it is a matter of record that obesity exerts a harmful influence on the course of arthritis and in cardiovascular disease.

In view of the fact that in general diet therapy and medication can control obesity on a long-term basis only with great difficulty, a recent report [1] on an effort to promote weight reduction in obese persons through psychological motivation is of interest. The approach utilized in the Boston experiments was based on the premise that only to a limited extent can obesity be validly related to endocrine dysfunction. The obese person, it was reasoned, consumes more food energy than is required by his body; the urge to eat must then lie in nonnutritional and nonmetabolic, namely, in psychological, causes. The gratification of a need for pleasure often revolves about food; the memory of early hunger frequently is a stimulus for overeating following a change in fortune; elaborate meals and, consequently, overindulgence in food often are a sign of social and financial status; chronic nervous and emotional tension frequently is relieved by habitual eating. Thus the Boston experiments, involving a trial period of 16 weeks, included groups of persons who had been unsuccessful in losing weight by their own efforts but who had an earnest desire to reduce. They had the approval of their physicians and assembled periodically with a leader trained to stimulate and guide intelligent discussions regarding the problem of mutual interest and the progress in meeting it and to emphasize general nutritional principles. The success of the project is indicated by continued meeting of the groups after the formal trial period has terminated.

Although this group approach to weigh control is still in the exploratory stage, it has interesting possibilities and may be an important practical factor in the reduction of obesity in the nation.

1. Chapman, A. L.: Weight Control—A Simplified Concept, Pub. Health Rep. **66**: 725 (June 8) 1951.

EXPERIMENTAL PRODUCTION OF CONGENITAL ANOMALIES WITH CORTISONE

Studies by Fraser and his associates [1] on the incidence of cleft palate in the offspring of cortisone-treated pregnant mice suggest that this drug may be added to the list of agents known to cause intrauterine developmental disturbances when administered to pregnant animals. Five genetically different groups of pregnant mice at various stages of gestation were given intramuscular injections of cortisone for four days. When treatment with 1.25 mg. or 2.5 mg. doses of cortisone was started on the 10th or 11th day of gestation, the incidence of cleft palate in the offspring was found to be 79% in two of the stocks (A and N) and 21% in the other three (C57, Black and tan, and H). For treatment started on the 12th or 13th day, the corresponding values were 29% and 8% respectively, and when treatment was started on the 14th to 17th day they were 29% and 3% respectively. An appreciable number of cleft palates were found when treatment was started after the 12th day of gestation, when the nasomaxillary fissure is said to have closed. The authors suggest that in these cases the defect may be due not to a delay in the developmental process but to a degenerative change. The congenital defect was not observed in offspring of untreated mice, in offspring of mice injected with the cortisone-free vehicle, or in the offspring of mice receiving 0.625 mg. doses of cortisone. An incidental observation was that of strain differences in the ability to become pregnant after coitus, the animals of stocks A and N showing a significantly lowered incidence of pregnancy than animals of stocks C57, Black and tan, and H.[2]

These findings do not necessarily indicate that therapeutic doses of cortisone during pregnancy offer any hazard to the offspring. As the authors point out, it is important to know whether cortisone and the naturally produced adrenal corticoids cross the human placenta before one can decide how far these findings in mice may apply to human congenital defects. The doses employed are large and, if administered to human beings on a similar milligram-kilogram basis, would amount to about 2 to 8 gm. Nevertheless, the data presented by these investigators are of interest in view of the limited information available concerning the etiology of congenital defects.

1. Baxter, H., and Fraser, F. C.: The Production of Congenital Defects in the Offspring of Female Mice Treated with Cortisone: A Preliminary Report, McGill M. J. **19**: 245 (Dec.) 1950. Fraser, F. C.: The Experimental Production of Congenital Anomalies, Canad. M. A. J. **64**: 270 (March) 1951. Fraser, F. C., and Fainstat, T. D.: Production of Congenital Defects in the Offspring of Pregnant Mice Treated with Cortisone: Progress Report, Pediatrics **8**: 527 (Oct.) 1951.

2. Fainstat, T. D.: Hereditary Differences in Ability to Conceive Following Coitus in Mice, Science **114**: 524 (Nov. 16) 1951.

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BLOOD LIPIDS AND ATHEROSCLEROSIS

Clinical and experimental investigation with blood lipids has added significantly to the knowledge of the nature of atherosclerosis. Much of this work has been done in an attempt to determine the role of blood lipids and dietary intake of cholesterol and fat in the production of atherosclerosis. A practical clinical program for the prevention and management of atherosclerosis, however, is not yet available.

The presence of lipids in atheromatous lesions and the observation that patients with atherosclerotic coronary artery disease in general show higher and more variable serum cholesterol levels suggested the possible etiological significance of these substances. While atheromatous lesions may be produced in the rabbit by feeding large amounts of cholesterol, in the dog cholesterol alone will not produce lesions, though cholesterol and thiouracil fed together are effective.[1] Even simultaneous administration is not effective in the rat.[2] The large amounts of cholesterol and thiouracil used in these studies are not physiological and limit the applicability of these results to humans.

Studies by Keys [3] on 482 clinically normal men failed to reveal a significant correlation between dietary cholesterol intake and serum cholesterol levels. Also, Keys reports that reduction of the cholesterol intake by 50% or more for several months failed to change the serum cholesterol levels. Only with an essentially fat-free, cholesterol-free, rice-fruit diet, which provided little sodium and was probably deficient in calories, was he able to produce a significant decrease in serum cholesterol levels. It is doubtful, therefore, that the low cholesterol diets in current use are effective.

Most provocative among recent developments is the suggestion that size and physical state of lipid molecules may be more important in the production of atherosclerosis than the serum level of cholesterol. Hueper [4] reported that repeated injections of polyvinyl alcohol and other macromolecular substances in certain animals resulted in atherosclerotic lesions containing deposits of the injected substance rather than lipids.

Gofman and others [5] approached this problem by ultracentrifugal flotation of serum cholesterol and other serum lipids. They found four groups of molecules in serum classified according to the rate (Sf units) at which they migrate in the flotation procedure. The Sf 10-20 group, according to Gofman, appears to be related to human atherosclerosis. In 230 patients with myocardial infarction, 91% showed Sf 10-10 molecules above the borderline resolution value, compared to 50% in a normal group. These molecules, however, were present in 40% of normal males 20 to 30 years old; only long-term observation will determine their prognostic significance.

Ahrens' [6] studies, on the other hand, indicate that the ratio of cholesterol to phospholipid may be more important in the deposition of lipids. Relatively high concentrations of phospholipids may "solubilize" cholesterol and neutral fat.

Keys,[7] in a review of his and Gofman's data, questions the latter's conclusions. Keys states there is no evidence that the concentration of G (giant molecules of Gofman) is more critical than that of cholesterol in the development of atherosclerosis. He concludes, also, that there is no evidence that G concentration in the blood may serve as an indicator of the probability of present or impending coronary disease. If there is any advantage to one of these measures in predicting or detecting coronary disease, Keys believes the evidence favors determination of total blood cholesterol.

Long-term studies are required to determine the diagnostic and prognostic value of blood lipid values in atherosclerosis. The role of dietary cholesterol and fat in the prophylaxis and management of atherosclerosis also requires further study. Despite the many unsolved problems and puzzling conflicts it presents, the rapidly expanding literature of this subject gives promise of an increasing understanding of the nature of atherosclerosis. There should result a more effective approach to the clinical management of this leading cause of death and disability.

LIFE EXPECTANCY

There has been some uncertainty about the figures for life expectancy at birth in the United States in 1900. It has been customary to use 49.2 years, based upon the deaths in 1900, 1901, and 1902 in the death registration states and the population estimate for July 1, 1901. The National Office of Vital Statistics has recently presented interpolated life expectancy values for each year, from 1900 to 1948, establishing that life expectancy at birth in 1900 was 47.3 and in 1948, 67.2.[1] This eight-page publication, which can be obtained without charge from the National Office of Vital Statistics, Washington 25, D. C., contains a new table, showing that life expectancy at birth in 1900 was 46.3 years for males and 48.3 for females as compared with 64.7 and 70.2 in 1948, gains of 18.4 years and 21.9 years respectively between 1900 and 1948. Later releases by the National Office of Vital Statistics give 67.6 years for 1949. The figures for 1950 have not yet been released. Thus, life expectancy at birth increased 20.3 years between 1900 and 1949, although there were some decreases during the period, particularly the sharp decrease in 1918 due to the influenza epidemic. These newer figures for life expectancy offer an authoritative basis for determining the increase that has been gained in the last half century. They also offer evidence of how much has been gained for the health of the people of this nation.

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THE PRESIDENT'S PAGE

A SPECIAL MESSAGE

Establishment of the President's Commission on the Health Needs of the Nation is the latest maneuver in President Truman's campaign to socialize the medical profession. This commission, to be financed from emergency funds allocated for national defense, is a transparent fraud on the American people. Every physician and all others associated with us in caring for the health of the nation should clearly understand its absurdities and its dangerous political significance.

The President's statement announcing formation of the commission to "make a critical study of our total health requirements, both immediate and long-term, and [to] recommend courses of action to meet these needs," was dated Dec. 29, 1951. Immediately, Dr. Gunnar Gundersen and I issued statements to the press voicing strong opposition to the proposal and exposing its political purpose.

Dr. Gundersen, of La Crosse, Wis., a member of the Board of Trustees of the American Medical Association, had been named by the President, without Dr. Gundersen's approval, as a member of the commission. He forthrightly disavowed such action, stating "I believe I am correct in assuming that the commission is designed both in its majority membership and in its objectives, as an instrument of practical politics, to relieve President Truman from an embarrassing position as an unsuccessful advocate of compulsory health insurance. I certainly cannot subscribe to such a masquerade, and today have requested that my name be removed from consideration as a commission member."

My own statement pointed out that, as all competent authorities know, "There is no health emergency in this country to require such an investigation or to justify the use of defense emergency funds by such a commission. The health of the American people never has been better . . . and greater progress is being made in providing prepaid medical care for all who need or desire it than at any other time in the nation's history." I suggested, with all earnestness, that "Congress should put a quick end to this misuse of national defense funds." As individual citizens, we should leave Congress no uncertainty as to how we feel about this obvious misuse of defense emergency funds for a program of political propaganda in a critical election year.

I should like to make it clear at this point that, in attacking the commission, we do not attack the individual members who are serving on it. This is a stacked commission, but among its membership are to be found sincere and able men who have accepted the appointment with the finest intentions. However, in such an obviously political framework and in the short space of time that the commission has been allowed for its work, they will be ineffectual.

Both President Truman and Dr. Paul B. Magnuson, chairman of the commission, have insisted publicly that it is an unbiased, impartial group. The degree of impartiality which may be expected from this commission is indicated by the following statement of its chairman, Dr. Magnuson, as reported in the January 14 issue of *Time* magazine: "If the A.M.A. hierarchy devoted as much time to care of their patients as they do to political maneuvering, we'd all be better off." If this type of "impartiality" pervades the atmosphere in which the commission meets and works during the months ahead, it is clearly apparent that this new commission will become just another adjunct of the Truman-Ewing propaganda machine.

One of the clearest proofs that this is simply another flagrant proposal to play politics with the medical welfare of the American people is its timing. The executive order establishing the President's Commission as of Dec. 29, 1951, states that "The commission shall cease to exist thirty days after rendition of its final report to the President under Section 3 of this order, or one year after the date of this order, whichever shall occur first." The one-year tenure of this commission, as any experienced student of medical affairs will attest, is wholly inadequate for a survey of the broad field projected in the Presidential order. Significantly, the year designated is the election year of 1952, when President Truman and Congressional candidates who have supported his socialized medicine proposals may find it politically expedient to avert a showdown before the people by stating that the whole subject is under study by a Presidential Commission and is therefore not an issue in the election.

This proposed survey, to be completed within a year or less, is to cover research of monumental proportions, if the President's outline of objectives is to be followed, research that could not possibly be accomplished with either accuracy or adequacy within less than three to five years.

Section 2 of the Executive Order lists eight broad subjects that the commission is "authorized and directed" to inquire into and to study. Space does not permit list-

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ing all of them, but consider the following subjects, any one of which would require a year or more of the most intensive work:

Subject (*a*): "The current and prospective supply of physicians, dentists, nurses, hospital administrators, and allied professional workers; the adequacy of this supply in terms of the present demands for service; and the ability of educational institutions and other training facilities to provide such additional trained persons as may be required to meet prospective requirements."

Or, subject (*d*): "The degree to which existing and planned medical facilities, such as hospitals and clinics, meet present and prospective needs for such facilities." Or, subject (*e*): "Current research activities in the field of health and the programs needed to keep pace with new developments." Or, subject (*g*): "The adequacy of private and public programs designed to provide methods of financing medical care." There are four other subjects, ranging from the ability of local public health units to meet civil defense requirements to the "desirable level" of federal, state, and local government expenditures in the health field.

The magnitude of the surveys proposed is evident. When one considers that it took the Medical Task Force of the Hoover Commission, with an ample staff and budget, one and one-half years to complete its study of the single subject of federal medical service, that the Commission on Chronic Illness will spend four to five years on its study in that field, and the Commission on Financing of Hospital Care will take three years, the impossibility of completing this proposed assignment is obvious.

The one subject that might possibly merit the expenditure of national defense emergency funds is subject (*c*): "The problems created by the shift of thousands of workers to defense-production areas requiring the relocation of doctors and other professional personnel and the establishment of additional facilities to meet health needs." In this case, President Truman might be interested to know that the Health Subcommittee of the Senate Committee on Labor and Public Welfare is already conducting such a study. In addition, the American Medical Association's Council on Industrial Health is making a survey of the number of physicians in such defense areas for the purpose of encouraging physicians to settle in any such areas found to be short of medical personnel.

President Truman's reference to compulsory health insurance in his State of the Union message, delivered to Congress on January 9, gave considerable force to reports that he plans to use his new Presidential Commission on Health to secure a temporary "cease fire" agreement on the issue of socialized medicine for the period of this year's election campaigns.

In this regard, the President said: "One of the things this commission is looking into is how to bring the cost of modern medical care within the reach of all our people.

"I have repeatedly recommended national health insurance as the best way to do this. So far as I know, it is still the best way. If there are any better answers, I hope this commission will find them."

JOHN W. CLINE, M.D.

Since the study of the health needs of the nation is a continuing one and is participated in by the medical profession and by other private agencies and groups, much duplication of effort by the President's Commission is inevitable. The Brookings Institution's two to three year study of the availability of medical service in the United States, covering many of the subjects mentioned in the President's directive to the commission, which is still under way and which will be completed this year, a new study on the financing of hospital care being undertaken by the Commission on Financing of Hospital Care, the studies of the Council on Industrial Health, Council on Medical Service, and Committee on Federal Medical Service of the American Medical Association, and the continuing studies of 53 constituent medical societies, 2,000 component county societies, and innumerable other voluntary and local governmental agencies are providing infinitely more information than this new commission will ever be able to develop.

It is unfortunate that the President refuses to admit the great progress that has been made by the medical profession in improving the health of the nation; he appears wholly uninformed concerning the reports that already have been made on medical progress of the past ten years, and most particularly of the past three. The entire fabric of the administration's case for federal control of the medical profession is woven from obsolete material and inaccurate figures. The people are being asked to believe in an emergency that did not exist even a decade ago and certainly does not exist today. That they are not too impressed is evidenced by the fact that, during the three years of Mr. Truman's most ardent advocacy of compulsory health insurance, more than 25 million additional persons enrolled in the many fine voluntary health insurance plans now available in the United States. Best estimates indicate that at this time over 80 million persons in this country have voluntarily obtained insurance as a cushion against the major costs of illness and the American people are determined to resolve this problem without either government help or interference.

It seems almost incredible that, in the face of all these facts, emergency defense funds should be allocated to a gigantic health survey that cannot possibly achieve its aims in the time allotted, is not necessary, and is so palpably political in its design.

JOHN W. CLINE, M.D., San Francisco.

ORGANIZATION SECTION

THE FOURTH PUBLIC RELATIONS CONFERENCE

Some working solutions to the biggest medical public relations problems facing the medical profession today were brought to light last month at the American Medical Association's Fourth Annual Medical Public Relations Conference, which was attended by over 500 public relations-minded physicians, including A. M. A. officers, trustees, and members of the House of Delegates, and lay public relations personnel. The conference, which was held Dec. 2-3, preceded the A. M. A. Clinical Session in Los Angeles.

Labelled as top public relations problems were the socialistic trend encroaching on the American system of life and the cost of medical care. Three significant surveys of public opinion in regard to medical care were reported on. Each study more clearly defined the public relations needs of the medical profession. The keynote speaker at the Sunday luncheon was Dr. Louis H. Bauer, A. M. A. President-Elect, who warned that America is fast moving down the road marked "socialism." Reechoing the conference theme, which was "joining forces for better public relations," Dr. Bauer urged physicians to band together to "restore what has been destroyed of our individual liberty." Dr. John W. Cline, A. M. A. President, toastmaster, introduced Dr. Bauer.

The first conference work session, titled "What the People Think," was devoted to reports of recent surveys of opinion on medical care. Chairman of the Sunday afternoon meeting was Dr. Gunnar Gundersen, chairman of the Executive Committee of the A. M. A. Board of Trustees. Dr. Gundersen introduced the speakers: a psychologist, a sociologist, and a public relations consultant.

A New York psychological consultant, Ernest Dichter, Ph.D., presented the results of a California study of doctor-patient relationships that he undertook for the purpose of discovering where public relations emphasis should be concentrated. To arrive at psychologically correct public relations, he said, the emotional and sometimes unconscious attitudes of physician and patient must be recognized.

"Much of the critical attitude of the public is due to a deep, underlying resentment and conviction that the modern doctor is out of tune with the times," Dichter stated. "A real improvement in doctor-patient relationship can only take place if both the physician and the patient realize that they are part of a continuously changing pattern of life.

A report of a Toledo, Ohio, survey conducted by the Health Information Foundation, the Toledo and Lucas County Academy of Medicine, and Wayne University of Detroit, was given by Wayne sociologist Edgar A. Schuler, Ph.D. Dr. Schuler said excessive fees, shortage of hospital beds, and shortage of medical personnel were listed by respondents as three major problems. Community leaders questioned about medical care, said Schuler, condemned the small minority of physicians for charging excessive fees and for unnecessary surgery. Even though opposed to compulsory health insurance, these persons felt something should be done to reduce the cost of medical care.

An urban-rural opinion study was reported on by Lawrence W. Rember, director of field service for the A. M. A. Department of Public Relations. The Decatur, Ill., study was conducted this fall by Rember on a demonstration basis to help the local medical society determine its public relations program. Rember pointed out that only a small minority, running from 6 per cent to 29 per cent, complained about physicians and medical care.

Complaints included occasional inability to obtain the services of a physician, the high cost of surgery and drugs, inadequate hospitals, discourteous office help, long waits in physicians' offices, and indifference or aloofness of physicians. Rember concluded by saying that the job is partly one of public education and partly one of correction within the profession.

Monday morning sessions considered "Public Relations Problem Number One: The Cost of Sickness." Dr. Joseph D. McCarthy, member of the A. M. A. Council on Medical Service, served as chairman. Participating in the first panel on the cost factor in everyday practice were Dr. Harlan A. English, Danville, Ill., who spoke on "Fees Should Be No Mystery"; Dr. Cyrus W. Anderson, Denver, who discussed "Explaining Those 'Other' Medical Expenses"; and Dr. E. E. Wadsworth, Alhambra, Calif., who read a paper by Dr. Stanley R. Truman, Ventura, Calif., on "Time Is Money for Your Patients, Too."

The second panel was entitled "Medical Society Solutions to the Cost Problem." Speakers included Stanley R. Mauck, executive secretary, Columbus, Ohio, Academy of Medicine; Dr. Earl W. Mericle, Indianapolis, and Joseph F. Donovan, San Jose, Calif., executive secretary, Santa Clara County Medical Society. Talks were given on "The Public Relations Factor in Collecting Bills," "Your Patient and His Big Bills," and "The 'Regardless of Ability to Pay' Idea." Out of these panel discussions came many suggestions for solving the public relations problems involved in the cost of sickness. Physicians, conferees agreed, should promote more widespread use of voluntary health and catastrophic insurance plans, discuss fees in advance with patients, discipline those few physicians who consistently overcharge, help patients budget for long-term medical care, and train office personnel to be good public relations representatives and use public relations techniques when collecting bills.

Dr. Lewis A. Alesen, Los Angeles, president-elect of the California Medical Association, warned at the Monday luncheon that there is danger in the philosophy that "capitalism is just a temporary way station on the road to socialism." Alesen, featured noon speaker, vigorously pointed out the responsibility of American physicians to reverse the trend toward socialism.

Wind-up conference sessions were devoted to two panels on the subjects of joining forces with other groups and planning effective public relations programs for 1952. Chairman was Harvey Sethman, executive secretary, Colorado State Medical Society.

Dr. Ernest B. Howard, Chicago, Assistant Secretary of the A. M. A., discussed national interprofessional relations, and Dr. Willis H. Huron, Iron Mountain, Mich., spoke on statewide organizations and the medical society. Dr. George Schwartz, New York, spoke on the physician's role in community affairs. Schwartz pointed out that if physicians do not realize their community responsibilities and take an active part in local affairs so that the community comes to rely upon their advice in medically related matters, they cannot expect the community to take their word on such subjects as compulsory health insurance.

Presenting the public relations program for the A. M. A. in 1952 on the national level, Leo E. Brown, Chicago, A. M. A. public relations director, told of the many activities now underway that will aid state and county medical societies in carrying out their own programs.

Public relations goals for state societies were outlined by Dr. Joseph E. Mott, Paterson, N. J., and Fred G. Mitten, Phoenix, Ariz., told what the county society can do for public relations. Final speaker was Dr. Charles R. Henry, Little Rock, Ark., who discussed the role of the individual physician in the 1952 public relations program of the medical profession. Dr. Henry urged physicians to recapture some of the warmth and sympathy of the "Old Doc" of the former days and to "come out of their offices into the community." According to Dr. Henry, "The individual physician can play a most worthwhile role in creating a reasonable and favorable public relations atmosphere through self-appraisal, self-improvement and cooperation, both in his local community and the larger community of his fellow practitioners. He must pattern his approach to patients, to his community and to his profession on a practical compromise someplace between the stylized portraits of 'Old Doc' and the currently popular medical model, the 'man in white.'"

A digest of conference proceedings will be available sometime after the first of the year and will be distributed to those who attended the conference. Others wishing copies may write the A. M. A. Public Relations Department.

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MEDICAL NEWS

ALABAMA

Study of Maternal Deaths in Alabama.—Throughout 1952 the State Department of Public Health and the Medical Association of the State of Alabama will sponsor and conduct a case study of each maternal death in Alabama. In seven areas 26 obstetricians will make personal case studies of maternal deaths. Case study forms so completed will then be referred to a central committee for review and evaluation. This committee will be composed of six recognized obstetricians. All marks of case identification will be removed from case records before they are referred to the central committee. Dr. Thomas M. Boulware, Birmingham, is chairman of the state committee.

CALIFORNIA

Portrait of Dr. Abbott.—A portrait of Dr. LeRoy C. Abbott, chairman of the division of orthopedic surgery in the University of California School of Medicine, San Francisco, has been presented to the school by his friends and associates. The portrait was painted last year on the occasion of Dr. Abbott's 60th birthday. It has been hung in Toland Hall. Dr. Abbott was the first professor of orthopedic surgery in the school of medicine. He was appointed to the University of California staff in 1930.

First Unit of Medical Center Completed.—The first unit of the new $21,080,000 University of California Medical Center in San Francisco, a small four-story unit, has been completed, and the radioactivity center is the first laboratory to be installed in the new building. Directed by Kenneth G. Scott, Ph.D., assistant professor of experimental radiology, it will serve the needs of the whole medical center for radioisotopes in research, diagnosis, and treatment. Supervision is exercised by a committee composed of Dean Troy C. Daniels, Ph.D., School of Pharmacy; Dean Willard C. Fleming, College of Dentistry; and Dean Francis S. Smyth, School of Medicine. The radioactivity center now offers the individual investigator the space, some $60,000 in specialized equipment, and the advice and aid of a staff experienced in the use of isotopes.

Dr. Raymond Allen Appointed Chancellor of University.—Dr. Raymond B. Allen, who retired December 31 as president of the University of Washington, Seattle, has been named chancellor of the University of California at Los Angeles to succeed the late Dr. Clarence A. Dykstra, who died two years ago. Dr. Allen, appointed in November by President Truman as head of the United States Psychological Strategy Board, will fill the federal position until he takes up his duties in Los Angeles next summer. The title of chancellor, replacing the title of provost, was created by the regents of the university this year in an administrative reorganization designed to give heads of both the Los Angeles and Berkeley campuses near-autonomy in their operations. However, they will report to the president of the university, rather than directly to the regents. Dr. Allen went to the University of Washington after having been dean of the medical schools at Wayne University in Detroit and the University of Illinois in Chicago.

COLORADO

Dr. Kern to Head New Medical Clinic.—Dr. Fred Kern Jr. of New York has been appointed director of the General Medical Clinic at Denver General Hospital. He will serve as assistant professor of preventive medicine and public health on a full time basis in his capacity as director, which is the first step of an experiment designed to demonstrate the practice of good general medicine. This program is being financed by a grant of $264,912 from the Commonwealth Fund to the University of Colorado School of Medicine. The base of operations will be Denver General Hospital, where a family medical service along with nursing and social work will function as needed in the patients' homes, in the clinic, and in the wards. It will be staffed by graduate students of medicine preparing for general practice, assisted by juniors from the medical school, under the supervision of a balanced group of teachers. The heart of the plan is a general medical clinic that will replace the outpatient department and will gradually replace the home care that now can be given only superficially. Dr. Kern has been assistant in medicine at Cornell University Medical College and is now instructor in medicine and in public health and preventive medicine there.

CONNECTICUT

Society News.—The East Hartford Medical Society has been recently organized with Dr. John N. Gallivan as president, Dr. Louis C. Acqua as secretary, and Dr. Harvey H. Sirota as treasurer.

Postgraduate Lectures at Stamford.—The Stamford Academy of General Practice is presenting a series of lectures during the first three months of the year on endocrinology and diseases of metabolism at Stamford Hospital Auditorium on Tuesday evenings at 8:30 p. m. The lectures are to be given by the following members of the faculty of Yale University School of Medicine, New Haven:

January 22, Pituitary Adrenal Axis, Dr. Cyril N. H. Long.
January 29, Diabetes Mellitus, John P. Peters.
February 5, Diabetes Mellitus, John P. Peters.
February 19, Thyroid Physiology, David M. Kydd.
February 26, Thyroid Physiology, David M. Kydd.
March 4, Liver Function in Health and Disease, Gerald Klatskin.
March 18, Liver Function in Health and Disease, Gerald Klatskin.
April, Lower Nephron Nephrosis, Louis G. Welt.
April, Edema, John P. Peters.

Dates of April lectures will be announced. The registration fee of $25 is payable to the Stamford Academy of General Practice, Dr. Arthur Koffler, Secretary, 218 Bedford St., Stamford. Interns and residents are invited to attend free of charge.

ILLINOIS

Gift for Hearing Conservation.—The Swanberg Kiwanis Foundation of the Kiwanis Club of Quincy has received another gift of $1,000 from Dr. Harold Swanberg. The foundation's principal activity has been to aid the Quincy and Adams County Hearing Conservation Program for School Children, which it began sponsoring in 1949.

Chicago

Meeting of Society of Physical Medicine.—The regular monthly meeting of the Chicago Society of Physical Medicine and Rehabilitation will be held at 8 p. m. January 23 at the University of Illinois, 1819 W. Polk St. "Peripheral Nerve Injuries" is the topic to be presented by Dr. Max K. Newman of Detroit. Preceding the scientific program, dinner will be served at the Medical Center, Y. M. C. A., 1804 W. Congress Street. Reservations should be made early with the secretary of the society, Dr. Milton G. Schmitt, 6970 N. Clark St., Chicago 26.

Lecture on Diabetes.—Dr. Lester Palmer, Seattle, past president of the American Diabetes Association, will speak on "Diabetic Children in the Modern World" at a meeting of the service unit of the Chicago Diabetes Association January 20 in Thorne Hall, Lake Shore Drive and Superior St. The meeting is open to the public.

Lectures on Cancer.—The second series of lectures on cancer will be presented by the Chicago Medical School in Amphitheatre A Wednesdays at 12:30 p. m. as follows:

January 23, Mechanism of Carcinogenesis, Alexander C. Ritchie, Chicago.
January 30, Effect of Diet in Cancer, Albert Tannenbaum, Chicago.
February 13, Environmental Cancer Hazards, Wilhelm C. Hueper, Bethesda, Md.
February 20, Bone Tumors: Human and Experimental, H. A. Sissons, London, England.
February 27, Chemotherapy of Cancer, Chester M. Southam, New York.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

IOWA

Public Health Director Honored.—Dr. Harry E. Ransom, Des Moines, was cited at a meeting of the Polk County Medical Society in November for his 30 years' service in the health department as assistant health officer and commissioner of health. A testimonial plaque in recognition of his services is being prepared for presentation to Dr. Ransom and will be placed permanently in the city hall.

LOUISIANA

Rudolph Matas Lecture.—The fifth annual Rudolph Matas Lecture will be held at 8 p. m. February 15 at Dixon Hall on the Tulane University campus, New Orleans. Dr. Joe V. Meigs, clinical professor of gynecology at Harvard Medical School and chief of the gynecological service of the Massachusetts General Hospital, Boston, will speak on "Treatment of Cancer of the Cervix." The lecture is sponsored each year by the Tulane chapter of Nu Sigma Nu medical fraternity in honor of Dr. Rudolph Matas, emeritus professor of surgery at Tulane. Dr. Meigs' address will be open to the public. Previous Matas lecturers include Dr. Alfred Blalock, Baltimore; Dr. William C. Menninger, Topeka, Kan.; Dr. Cecil J. Watson, University of Minnesota physician, and Dr. Frank Lahey, Boston.

MASSACHUSETTS

Hospital Evening Lectures.—The House Officers' Association of Boston City Hospital announces the following programs in its evening lecture series for February:

February 5, Surgical Diseases of the Pancreas, Richard B. Cattell, Boston.
February 12, Surgical Therapy of Inflammatory Disease of Ileum and Large Bowel, John H. Garlock, New York.
February 19, Intracellular Parasitism in Brucellosis, Wesley W. Spink, Minneapolis.
February 21, Medical Genetics, Laurence H. Snyder, Sc.D., Oklahoma City.
February 26, The Heart and the Thyroid with Particular Reference to Radio-Active Iodine Therapy, Herrman L. Blumgart, Boston.

These programs are held at 7 p. m. in the New Cheever Amphitheatre of the Dowling Building of Boston City Hospital.

MICHIGAN

Symposium on Blood Disorders.—The first annual symposium on disorders of the blood will be held at the Wayne University College of Medicine, Detroit, January 19. Guest of honor will be Dr. Paul A. Owren, professor of medicine at the University of Oslo, Norway. More than 20 papers dealing with blood research will be presented, including two by Fulbright exchange students, Dr. P. de Nicola, University of Pavia, Italy, and Miss Norma Alkjaersig, Biological Institute of the Carlsberg Foundation, Copenhagen, Denmark. Other participants are from Detroit hospitals, Wayne University, University of Michigan, Ann Arbor, and Parke, Davis and Company. Chairman of the conference will be Walter H. Seegers, Ph.D., professor of physiology at Wayne.

NEW YORK

Postgraduate Lectures.—Dr. Joseph Gordon of the Ray Brook State Tuberculosis Hospital will speak on "Bronchiectasis" before the Geneva Academy of Medicine in Geneva, at 8:30 p. m. January 21. On February 21 Dr. Stewart Wolf, New York, will address the Utica Academy of Medicine at the Hotel Utica at 8 p. m. on "Visceral Pain Mechanisms." This instruction is provided by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

Higher Salary Schedule for Public Health Physicians.—A higher salary schedule is being featured in the New York State Department of Health drive to enlist physicians to fill departmental positions. Vacancies exist for consultants in the fields of tuberculosis control, venereal disease control, pediatrics, rheumatic fever, obstetrics, and medical rehabilitation with salaries starting at $8,600 and going to $9,600 after three years' service. For physicians with a minimum of preperation in these fields or in public health, there are a variety of openings at $7,000 to $7,800. Vacancies also exist for local health officers at this salary range and at $9,000. Qualifications for all jobs have been reviewed and lower minimum requirements set up wherever possible to attract young men to the work. Physicians with a few years of practice, as well as those who have completed internship or residency, may be granted liberal stipends and tuition for academic and field training in public health. In addition to added pay incentives, other benefits are derived from this type of service. Opportunity for independent research, association with leading men in public health, permanent civil service status with opportunities for merit advancement to positions paying $10,000 and more, liberal sick leave, four weeks of vacation per year, and New York State's retirement plan, which permits retirement at age 55, are features of service with the department. Under a law passed by the 1951 legislature, noncitizen physicians may be hired to fill certain vacancies. Interested physicians are urged to write for descriptive literature to the New York State Department of Health, Albany.

New York City

Psychiatrists Wanted.—The Municipal Civil Service Commission of the City of New York is issuing and receiving applications for psychiatrist, grade 4, through January 23. There are 26 vacancies in the department of hospitals at salaries of $6,650 per year including a cost of living adjustment of $250 per year. Information may be obtained from the office at 299 Broadway, New York 7.

Periodic Visiting Psychiatrists.—Dr. Harry C. Solomon, professor of psychiatry at Harvard Medical School and director of Boston Psychopathic Hospital, has been appointed as visiting psychiatrist to Mount Sinai Hospital, New York, to serve for one week starting with a lecture on the evening of January 29. This periodic appointment was instituted by Mount Sinai's psychiatry service as a way of bringing into the hospital varied points of view in psychiatry. The first visiting psychiatrist was Dr. Roy R. Grinker, director of the Institute for Psychosomatic and Psychiatric Research and Training of the Michael Reese Hospital in Chicago.

Cerebral Palsy Institute.—The Coordinating Council for Cerebral Palsy in New York City, Inc., will again sponsor a Cerebral Palsy Institute, to be given January 21-February 1. Tuition will be $25. Qualified physicians as well as physical, occupational, and speech therapists, nurses, social service rehabilitation and guidance workers, teachers, and psychologists are eligible to attend. The institute will include seminars, field trips, clinical demonstrations, and lectures. This year emphasis will be placed on the medical and sociopsychological aspects of mental deficiencies in persons with cerebral palsy, and on recent contributions of psychometrics to this field. Following the institute, and starting February 4, the council in cooperation with the College of Physicians and Surgeons, Columbia University, will offer a three month cerebral palsy course for qualified physicians and occupational and physical therapists. Tuition is $250 and may include the institute if desired. A limited number of scholarships are available. Information and application blanks can be obtained from Miss Marguerite Abbott, Executive Director, The Coordinating Council for Cerebral Palsy in New York City, Inc., 270 Park Avenue, New York 17.

NORTH DAKOTA

University News.—Dr. William E. Cornatzer, formerly assistant professor of biochemistry at the Bowman Gray School of Medicine of Wake Forrest College, Winston-Salem, N. C., has accepted a position as professor and head of the department of biochemistry at the University of North Dakota School of Medicine, Grand Forks.——The North Dakota Cancer Society has made a grant of $27,400 to establish a radioactive isotope laboratory at the medical school for the treatment of cancer and to study the metabolism of experimental cancer with isotopes.

OHIO

Lecture on Psychiatry.—Dr. Moses R. Kaufman, chief, department of psychiatry, Mount Sinai Hospital in New York, held a conference January 16, and he spoke before the Mount Sinai Hospital of Cleveland Medical Society January 17 on "Integration of Psychiatry in a General Hospital Setting."

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PENNSYLVANIA

Personals.—Dr. Herman Frederick Boerner Jr. has been appointed to the staff of The Woods Schools, Langhorne.—— Dr. William K. Clark, Pittsburgh, has been appointed chief of the cancer division of the state department of health, succeeding Dr. Leverett D. Bristol, who has resigned.

First Public Health Unit Under New Law.—Butler County has been selected for the establishment of the first county public health unit under the state's new public health law. The cooperation of the county commissioners and the support of 55 citizen organizations in the county, as well as its proximity to Pittsburgh, were determining factors in selecting Butler County. The unit may become a training field for students at the Graduate School of Public Health of the University of Pittsburgh. Dr. Clarence D. Barrett, who has been a public health administrator in several counties in Ohio and Michigan, will direct the unit. Until formation of the county health department and the appointment of the county health board, the unit will be state financed and directed. Butler County has a population of about 98,000 and an area of 790 miles.

Philadelphia

Diagnostic Service in Cerebral Palsy.—St. Christopher's Hospital for Children, in cooperation with United Cerebral Palsy Associations and the department of pediatrics of Temple University School of Medicine, announces the establishment of a Diagnostic Service for Neuropathologic Studies of Cerebral Palsy. The facilities of any single institution for investigation of neuropathologic problems are limited by the small number of autopsies performed on children with neurologic disorders, and by the inaccessibility of facilities for histologic examination of the central nervous system. This new service, under the direction of Dr. James B. Arey and Dr. Waldo E. Nelson, with Dr. Ernest A. Spiegel as consulting neuropathologist, has been formed in an effort to make these facilities available to more physicians and hospitals. The service will correlate the clinical course and pathologic findings in children in whom (1) a disease of the central nervous system is suspected or (2) the diagnosis of cerebral palsy has been established. The institution submitting a clinical history and a brain from such a patient will receive a detailed report, together with a pertinent bibliography and representative histologic sections, within six months after the specimen is received. Transportation costs and containers will be furnished on application to Dr. James B. Arey, St. Christopher's Hospital for Children, 2600 North Lawrence St., Philadelphia 33.

TEXAS

Medical Library in Houston.—The Houston Academy of Medicine announced its plans January 7 to proceed with the building of its Medical Library in the Texas Medical Center. Gifts toward the building, including $300,000 from the M. D. Anderson Foundation, and funds in hand have assured the academy of sufficient capital to proceed. The membership will be asked to raise an additional $150,000 to complete the fund for the new building, which will cost not more than $1,250,000. In addition to the space assigned for a future library of 140,000 volumes, the new building will house the administrative offices of the Texas Medical Center, Inc. Other features of the plan are an auditorium seating 500 persons, meeting rooms, study cubicles, offices of the academy, and possibly a clubroom for members. The building will be located on the three-acre tract recently deeded to the academy by the Texas Medical Center and opposite the main entrance of the new Hermann Hospital.

VIRGINIA

Grant for Services to Crippled Children.—The Nemours Foundation of Wilmington, Del., has allotted $9,800 to the University of Virginia Hospital, Charlottesville, for hospital and convalescent care of crippled children during 1952. An additional $1,500 has been allocated to the University of Virginia Speech and Hearing Clinic. These gifts represent a phase of the program of the Nemours Foundation, which has allocated $39,000 for development of services to crippled children in Virginia for the current year.

GENERAL

Grants-in-Aid of Ophthalmic Research.—The National Council to Combat Blindness, in accordance with its program of supporting ophthalmological research, will welcome applications for its third annual grant-in-aid awards to be made in June, 1952. Applications to be considered should be in the office of the council no later than April 15. Application forms may be obtained by addressing: Secretary, National Council to Combat Blindness, 1186 Broadway, New York 1.

Helen Putnam Fellowship.—Radcliffe College is offering again for the academic year 1952-1953 the Helen Putnam Fellowship for advanced research, a postdoctoral resident fellowship for women in the fields of genetics or of mental health, including such fields as clinical psychology and child development. The award carries a grant of $3,000 a year with the possibility of renewal. Applications should be returned to the Secretary of the Graduate School, Radcliffe College, Cambridge, Mass., not later than April 1, 1952. Preference will be given to those whose research is already in progress.

Society Elections.—The following officers of the American Pharmaceutical Association were among those elected recently by a mail ballot and will be installed at the annual convention in Philadelphia the week of August 17: R. Q. Richards, Fort Myers, Fla., president-elect; Tom D. Rowe, Ann Arbor, Mich., first vice-president-elect, and Charles F. Lanwermeyer, Ph.B., Waukegan, Ill., second vice-president-elect. The following officers of the association will continue to function until the Philadelphia convention: Don E. Francke, M.S., Ann Arbor, Mich., president; Joseph B. Burt, Ph.D., Lincoln, Neb., first vice-president, and John A. MacCartney, Detroit, second vice-president. The secretary, now Robert P. Fischelis, Sc.D., Washington, D. C., and the treasurer, Hugo H. Schaefer, Ph.D., Brooklyn, are elected by the house of delegates for three year terms.

Two Large Cities Approve Fluoridation.—The Philadelphia City Council has approved a plan for fluoridation of the city's water supplies and appropriated $150,000 for this project. With its 2,000,000 population, Philadelphia is the nation's third largest city and the largest to date to adopt fluoridation. Active in promoting adoption of the public health measure were Dr. Rufus S. Reeves, city director of public health, and a committee headed by LeRoy M. Ennis, D.D.S., president of the American Dental Association, and Charles H. Patton, D.D.S., president of the Pennsylvania State Dental Association in 1950.

A recent referendum in San Francisco resulted in a decision to fluoridate that city's water supply. The California State Dental Association and the San Francisco Dental Society promoted the project with a Citizens' Committee for the Protection of San Francisco's Good Water.

Arthritis Foundation Seeks Support.—The Arthritis and Rheumatism Foundation, 23 West 45th St., New York 19, is appealing for public support of its program of treatment, education, and research on arthritis and rheumatism. It estimates that 7½ million men, women, and children suffer from some form of arthritis or rheumatic disease, resulting in an annual labor loss of an estimated 97,200,000 work days, and an annual expenditure in public relief of the disabled of $128,000,000. The foundation was established under the sponsorship of the American Rheumatism Association and incorporated as a nonprofit organization under the laws of the State of New York in April, 1948. It operates through a network of chapters established in cities, states, and regional areas. A medical and scientific committee of about 20 doctors and research scientists plans the medical policies of the foundation, sets the standards of medical research work, and employs the personnel. Members of the board of directors, which manages the business affairs of the foundation, are recommended by the American Rheumatism Association and serve as volunteers.

Services for Crippled Children.—Services and facilities offered crippled children through the nation's Easter Seal societies reached an all-time high in 1951, according to the executive director of the National Society for Crippled Children and Adults, Chicago. The year marked the 30th anniversary of the society. The 511 specific services and facilities either in operation or in

process of development during 1951 are the following: 114 outpatient treatment-training centers for crippled children and children with cerebral palsy; 58 evaluation and diagnostic clinics; 40 additional facilities receiving either funds or services of a therapist; 25 speech centers; 25 centers of various kinds now being planned; 10 residential facilities such as convalescent homes; 81 camps for crippled children in 33 states; and 158 public school systems that get assistance in special education for crippled children. In addition, 200 parents' groups have been organized by the national society and its affiliates. In 1951 the total number of professional persons trained for specialized work with crippled persons under scholarships, fellowships, grants, and workshops of the Easter Seal societies reached 700.

Walter Reed Society Organized.—Dr. Max Sadove, head of the department of anesthesiology at the University of Illinois, Chicago, was elected organizing president of the Walter Reed Society at the first official meeting of the group held in Los Angeles at the close of the American Medical Association meeting. The society, which is sponsored by the National Society for Medical Research, is comprised of those who have served as "human guinea pigs" in medical research or experimentation under the direction of a qualified scientist. Other officers elected at the meeting were Dr. Clinton H. Thienes, head of the department of pharmacology and toxicology, University of Southern California School of Medicine, Los Angeles, vice-president; Dr. Lloyd D. Seager, head of the department of physiology and pharmacology, University of Arkansas, (Fayetteville), vice-president; Dr. John P. McGovern, chief of the outpatient department of Children's Hospital, Washington, D. C., vice-president; Miss Betty Jenney, research associate, University of Illinois, secretary-treasurer.

Section Meeting of Surgeons.—A section meeting of the American College of Surgeons will be held at the Hotel Adolphus in Dallas, Texas, February 4-6. Out-of-state speakers include:

Hilger P. Jenkins, Chicago, Polyps of the Large Intestine.
James H. Forsee, Denver, Surgical Treatment of Pulmonary Tuberculosis.
Robert Woodruff, Denver, Critical Points in Gastric Resection.
Robert S. Dinsmore, Cleveland, Prevention of Cardiac Arrest.
J. Dewey Bisgard, Omaha, Surgery of the Aged.
James T. Priestley, Rochester, Minn., Surgical Lesions of the Pancreas.

Symposiums and panel discussions will be presented as follows:

Breast Tumors, Frederick H. Krock, Fort Smith, Ark., moderator.
Symposium on Trauma, Isaac W. Kaplan and Eugene B. Vickery, New Orleans, and Carl A. Moyer, St. Louis.
Symposium on Cancer, George V. Brindley, Temple, Texas, E. Lawrence Keyes, St. Louis, Arthur Grollman, Dallas, and Henry G. Schwartz, St. Louis.
Hysterectomy: Total, Subtotal, or Vaginal, Curtis H. Tyrone, New Orleans, moderator.
Bleeding from the Gastrointestinal Tract, Ambrose H. Storck, New Orleans, moderator.

Dr. Paul R. Hawley, Chicago, director of the American College of Surgeons, will speak at the dinner Monday evening.

Communicable Diseases in 1951.—The total volume of cases of communicable diseases for the year 1951 reported weekly by states to the Public Health Service increased over that reported in 1950. Most of the increase was due to a higher incidence of measles in 1951. Such diseases as diphtheria, smallpox, and typhoid fever again showed moderate to substantial decreases in incidence. The number of cases of diphtheria reported for 52 weeks in 1951 was 4,152, which is about 30% below that for 1950. A large proportion of the cases were reported from states in the southeastern part of the country. The incidence of smallpox, a disease that is approaching the vanishing point in the United States, was 60% below the 1950 figure. Typhoid fever declined about 10% in number of cases reported. Whooping cough cases also declined about 40%. The cumulative total of poliomyelitis cases was 28,665 in 1951 as compared with the provisional total of 33,350 in 1950. Fewer cases of influenza, pneumonia, Rocky Mountain spotted fever, and tularemia were reported. The lower incidence of Rocky Mountain spotted fever for the country as a whole in the past few years is principally due to a lower incidence in the Mountain and Pacific states. No decline has been reported in the southeastern section of the country in recent years.

A higher incidence of anthrax, infectious encephalitis, malaria, measles, meningococcal meningitis, scarlet fever, and streptococcal sore throat was reported in 1951. Coincident with an increase of anthrax cases in man was a relatively high incidence in animals in certain sections of the country where the disease had not been observed for a number of years. For the second year in succession, meningococcal meningitis showed a slight increase in incidence. The increase in malaria during 1951 was due to infected military personnel who returned from Korea. About one-fourth of the more than 6,000 cases reported were classified as civilian, but most of them had been detached from military service or were treated by civilian physicians when on furlough. Follow-up studies of reported cases in many states indicated no evidence of an increase in indigenous malaria in the United States.

During 1951 about 200 reports of epidemics or unusual occurrence of diseases, principally infectious diseases, were reported. About three-fourths of those received indicated that food was suspected of being the vehicle of infection. Only three outbreaks were reported in which water was definitely considered the means of transmission. A relatively large number of outbreaks of infectious hepatitis were reported in which faulty sanitation was suspected of playing a part. During the early part of 1951 outbreaks of respiratory disease were reported which were shown to be due to A-prime influenza virus. The occurrence of epidemic influenza in Europe, then its appearance in Canada and the United States were recorded. Nowhere in the United States was a high mortality of the disease reported. The principal effect, insofar as mortality was concerned, was in old persons. Reports such as the above were received from 30 different states and 3 territories. The spread of rabies in the northwestern part of the country among wild as well as domestic animals was reported. In several of these states rabies in animals appeared for the first time in more than a decade.

CANADA

Conference on Silicosis.—This conference will be held January 28-30 at the Noranda Recreation Centre in Noranda, Quebec, by the McIntyre Research Foundation in collaboration with the Western Quebec Mines Accident Prevention Association. Scientific papers to be given are as follows:

J. Avila Vidal, Montreal, Quebec, Examination Procedures for Silicosis as Practiced by the Workmen's Compensation Commission of Quebec.
Richard S. M. Fisher, Bourlamaque, Quebec, Examination Practice and Experiences Regarding Compensation and Certification.
Mr. Phillippe Monette, K.C., Quebec, Legal Aspects of Compensation in Quebec in Regard to Pneumoconiosis.
Mr. Maurice Lachance, Quebec, Mine Ventilation and Dust Control in Quebec Mines.
Anthony J. Lanza, New York, Asbestosis.
Paul G. Bovard, Tarentum, Pa., Pitfalls in X-Ray Technique and Interpretation.
Fernand Gregoire, Montreal, Quebec, Pulmonary Function Studies.
Jethro Gough, Cardiff, Wales, Patterns in Pneumoconiosis.
Reginald H. Smart, Los Angeles, and Walter M. Anderson, Lompoc, Calif., Diatomaceous Earth Pneumoconiosis.

Pullman reservations and rail transportation from Toronto will be available from the Royal York Hotel. The Northland train leaves Toronto for Noranda at 6 p. m. Eastern Standard Time January 27.

CORRECTION

Nation's Health in 1951.—The death rate for the United States during 1951 was about 9.7 per 1,000 rather than 917 per 1,000 as was stated in THE JOURNAL January 12, page 127.

Veterans Medical Advisory Group.—With reference to the item in Miscellany on advertising page 14 in THE JOURNAL, Dec. 29, 1951, Dr. Derrick T. Vail, chairman, department of ophthalmology, Northwestern University, Chicago, will become chairman of the Special Medical Advisory Group of the Veterans Administration in January, 1952, succeeding Dr. Charles W. Mayo, Rochester, Minn., who has been chairman of the group since it was organized six years ago. The advisory group has adopted a policy of rotation. Four new members are elected each year for a five year term. Dr. Mayo will continue as a member of the group. Other new officers of the group are Dr. Franklin D. Murphy, chancellor of the University of Kansas, vice-chairman, and Dr. Brian B. Blades, professor of surgery at George Washington University, secretary.

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MEETINGS

AMERICAN ACADEMY OF ALLERGY, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Biltmore Hotel, Atlanta, Ga., March 6-8. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago, Jan. 26-31. Dr. Harold B. Boyd, 122 South Michigan Ave., Chicago 3, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY:
Middle Section, Indianapolis Athletic Club, Indianapolis, Jan. 28. Dr. Ralph J. McQuiston, 20 North Meridian St., Indianapolis 4, Chairman.
Western Section, Los Angeles County Medical Association Building, Los Angeles, Jan. 19-20. Dr. Howard P. House, 1136 West 6th St., Los Angeles 14, Chairman.

AMERICAN SOCIETY FOR SURGERY OF THE HAND, Palmer House, Chicago, Jan. 25-26. Dr. J. H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

ATLANTIC COAST LINE RAILWAY SURGEONS ASSOCIATION, Fort Sumpter Hotel, Charleston, S. C., Jan. 24-25. Dr. Braswell E. Collins, Waycross, Ga., Secretary

CENTRAL SURGICAL ASSOCIATION, Toronto, Can., March 6-8. Dr. James T. Priestley, 102 Second Avenue S.W., Rochester, Minn., Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, March 4-7. Dr. Walter C. Bornemeier, 86 East Randolph St., Chicago 1, Secretary.

INTERNATIONAL MEDICAL ASSEMBLY OF SOUTHWEST TEXAS, Municipal Auditorium, San Antonio, Jan. 22-24. Dr. John J. Hinchey, P. O. Box 2445, San Antonio 6, Secretary.

MICHIGAN CLINICAL INSTITUTE, Book-Cadillac Hotel, Detroit, March 12-14. Dr. H. G. Cummings, 606 Townsend St., Lansing 15, Chairman.

NATIONAL CONFERENCE ON MEDICAL SERVICE, Palmer House, Chicago, Feb. 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill., Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY, Municipal Auditorium, New Orleans, March 10-13. Dr. Woodard D. Beacham, 1430 Tulane Ave., Room 105, New Orleans 12, Secretary.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:
Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 Oak Lawn Ave., Dallas 4, Chairman.
Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. Allman, 104 St. Charles Place, Atlantic City, Chairman.
Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.

SOUTHEASTERN SURGICAL CONGRESS, Atlanta, Ga., March 10-13. Dr. Benjamin J. Beasley, 701 Hurt Bldg., Atlanta 3, Ga., Secretary.

SOUTHWEST ALLERGY FORUM, Hotel Baker, Dallas, Texas, March 2-4 Dr. James Holman, Medical Arts Bldg., Dallas, Secretary.

TRI-STATES MEDICAL ASSOCIATION OF THE CAROLINAS AND VIRGINIA, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Netherlands, Secretary.

EUROPEAN SOCIETY OF CARDIOVASCULAR SURGERY, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

INTERAMERICAN CARDIOLOGICAL CONGRESS, Buenos Aires, Argentina, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, Secretary-General.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Mexico City, Mexico, Nov. 2-6 Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

INTERNATIONAL COLLEGE OF SURGEONS, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

INTERNATIONAL CONFERENCE ON VITAMINS AND METABOLISM, Havana, Cuba, Jan. 25. Dr. Angel Vieta Barahona, Medical School, University of Havana, Havana, Cuba, General Chairman.

INTERNATIONAL CONGRESS OF HAEMATOLOGY, Mar del Plata, Argentina, Sept. 21-26. Dr. Carlos Reussi, Anchorena 1710, Buenos Aires, Argentina, Secretary.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

INTERNATIONAL CONGRESS ON NEUROPATHOLOGY, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London. W.C.2, England. Hon. Secretary.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

NEURORADIOLOGIC SYMPOSIUM, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

PAN-AMERICAN CONGRESS OF GASTROENTEROLOGY, Mexico City, D.F., May 11-17. Dr. R. Flores-Lopez, Calle Dr. Balmis, No. 148, Mexico City, D.F., Secretary.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Havana, Cuba, Jan. 20-24. Dr. Pedro Hernandez Gonzalo, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

PAN-EUROPEAN CONGRESS OF GASTROENTEROLOGY, Bologna, Florence and Rome, Italy, April 20-26. Prof. Guido Bassi, Policlinic of St. Orsola, Bologna, Italy, Secretary.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Jan. 28-30; *Part II,* April 21-22; *Parts I and II,* June 16-18 or June 23-25; *Part I,* September. All centers where there are five or more candidates. Exec. Sec., Dr. John P. Hubbard, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Various Locations, July 18. Final date for filing application was Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, March 1952. *Oral.* Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Candidates for these tests must have completed three years of approved training prior to July 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May 1952. Final date for filing applications for the May 1952 examination was Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY. *Written.* Feb 1, 1952. Final date for filing applications was Nov. 1. *Oral.* Chicago, June 9-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Practical.* Philadelphia, May 29-June 3; Chicago, Oct. 6-10 and New York City, June 6-10, 1953. Sec., Dr. Edwin B. Dumphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II.* Chicago, Jan. 23-25. Final date for filing applications for the 1952 Part II examinations was Aug. 15. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY. Toronto, May 13-17; Chicago, Oct. 6-10. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PEDIATRICS: Written examination under local monitors, Jan. 11. This is the only written examination which will be given during 1952. *Oral.* New York City, Feb. 1-3; St. Louis, Mo., Mar. 21-23; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II.* Chicago, June 9-10. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH. *Written.* Berkeley, Calif., Minneapolis, New Orleans and Baltimore. April 18. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY. *Part I.* Kansas City, Minneapolis, Philadelphia and San Francisco, May 3. Examination includes both oral and written examinations in the basic sciences. *Dates and places tentative.* Sec., Dr. Louis A. Buie, 102-110 2d Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral* New York, Dec. 17-18. Final date for filing applications was Sept. 1. Act. Sec., Dr. David A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn

AMERICAN BOARD OF RADIOLOGY: *Oral.* Spring 1952. Final date for filing application was Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1952. Final date for filing application was Dec. 1, 1951. The following written examination will be given in October 1952. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb 9-13, 1952. Final date for filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

BOARD OF THORACIC SURGERY: Various parts of the country. *Written.* Feb. 29, 1952. Final date for filing application is Jan. 15. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Phemister, Dallas Burton ✠ Chicago; Thomas D. Jones Professor Emeritus of Surgery at the University of Chicago, died in the Albert Merritt Billings Hospital December 28, aged 69, of pulmonary embolism, following an operation. Dr. Phemister was born in Carbondale, Ill., July 15,1882. He received his medical degree from Rush Medical College in 1904 and later studied in Paris, Berlin, London, and Vienna. During World War I he served as a major in the Army Medical Corps behind the lines of the battles of the Argonne, Chateau Thierry, St. Mihiel, and Champagne. He was attending surgeon at the University of Chicago Clinics and for many years was on the staffs of Presbyterian Hospital and Rush Medical College. Dr. Phemister established the department of surgery of the University of Chicago in 1925 and was chairman of it until he reached the retirement age. In 1940 he was designated the first holder of the Thomas D. Jones professorship, serving until 1947 when he became professor emeritus. In the same year a lectureship in his honor was established at the university. In 1939 he delivered the sixth E. Starr Judd Lecture of the University of Minnesota, Minneapolis, and in 1929 delivered the fifth Lewis Linn McArthur Lecture of the Billings Foundation at the Institute of Medicine of Chicago, of which he was president in 1948-1949. In 1925-1926 he was chairman of the Section on Surgery, General and Abdominal, of the American Medical Association; in 1948-1949 he served as president of the American College of Surgeons, in 1938 as president of the American Surgical Association, and he was past president of the Society of Clinical Surgery and the Chicago Pathological Society. He was a member of the American Orthopaedic Association, in 1948 became an honorary fellow of the Royal College of Surgeons of England, and last fall was awarded the French Legion of Honor of France at a meeting in Paris of the International College of Surgeons, of which he was vice-president from 1949 to 1951. Dr. Phemister was a specialist certified by the American Board of Orthopaedic Surgery and a member of the founders group of the American Board of Surgery, and he was one of the first to demonstrate that surgical shock is the result of loss of blood. His beginning studies in experimental physiology in 1926 and his subsequent investigations were major factors in the foundation of the modern concept of surgical shock, its treatment, and prevention. A specialist in bone pathology, Dr. Phemister devised a procedure for the arrest of the growth of bone at the epiphyses to equalize the length of the lower extremities in children and adolescents where growth had been altered by disease. His other research work contributing to present day surgery includes studies on the calcification of gallstones and studies on cancer of the esophagus and the upper portion of the stomach. In 1945 at the 20th anniversary celebration of his chairmanship of the department of surgery, University of Chicago, he was presented with a special bound volume of the December issue of *Annals of Surgery*, which consisted of contributions of his pupils and former associates.

Crisp, William Henry ✠ Denver; born in London, England, Oct. 4, 1875; Denver and Gross College of Medicine, 1907; for many years a member of the faculty of his alma mater; for 11 years a member of the American Board of Ophthalmology, of which he had once been chairman; member of the American Academy of Ophthalmology and Otolarngology, American Ophthalmological Society, Association for Research in Ophthalmology, and the Royal College of Physicians and Surgeons of Canada; repeatedly elected to office in the Colorado Ophthalmological Society; fellow of the American College of Surgeons; in 1932 member of the House of Delegates of the American Medical Association; director, former editor and, since the inception of the *American Journal of Ophthalmology*, director of the abstract department; in 1944 was presented with a watch in appreciation of his long service to the journal and for outstanding contributions to ophthalmology; editor of "Ophthalmic Yearbook"; was especially honored at the Pan-American Congress of Ophthalmology in Havana in 1948; affiliated with Denver General, Colorado General, and Mercy hospitals; died October 16, aged 76, of cerebral hemorrhage.

Hall, Custis Lee ✠ Washington, D. C.; born in Washington, July 15, 1888; George Washington University School of Medicine, Washington, D. C., 1912; clinical professor of surgery at his alma mater; specialist certified by the American Board of Orthopaedic Surgery; member of the International College of Surgeons and past president of the United States chapter; served as president of the Washington Orthopedic Club and the Washington Medical and Surgical Society; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; served in France during World War I; affiliated with Naval Medical Center, Bethesda, Md., Central Dispensary and Emergency Hospital, Garfield Memorial Hospital, George Washington Hospital, Children's Hospital, Columbia Hospital for Women and Lying-in Asylum, St. Elizabeth's Hospital, Crippled Children's Clinic of Gallinger Municipal Hospital, Veterans Administration Hospital, and Doctors Hospital, where he died November 10, aged 63, of complications following abdominal surgery.

Corbett, James Frank, Minneapolis; born in Chippewa Falls, Wis., Feb. 16, 1872; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; professor emeritus of neurosurgery at his alma mater and formerly professor of surgery at the graduate school; member of the founders group of the American Board of Surgery; member of the American Medical Association, Western Surgical Association, Minnesota Academy of Medicine, and Minnesota Neurological Society; fellow of the American College of Surgeons; past president of the Hennepin County Medical Society and the Minnesota State Medical Association; served during World War I; on the staffs of Minneapolis General, Asbury, Swedish, St. Mary's, and Abbott hospitals; died November 6, aged 79, of coronary heart disease.

Ourian, Adom K. ✠ New York; born in Constantinople Aug. 1, 1888; University of Istanbul Medical Faculty, Turkey, 1914; specialist certified by the American Board of Radiology; member of the Radiological Society of North America; captain in medical corps of Turkish Army from 1915 to 1918; for many years affiliated with the New York Post Graduate Medical School and Hospital; formerly on the staffs of the Sea View Hospital in Staten Island, Southside Hospital in Bayshore, and Central Islip (N. Y.) State Hospital; died in University Hospital October 29, aged 63, following an operation for intestinal obstruction.

Lescohier Alexander William ✠ Grosse Pointe, Mich.; Detroit College of Medicine, 1909; past president of the American Drug Manufacturers Association; member of the Industrial Medical Association; for many years associated with Parke, Davis and Company, of which he had been president, and at the time of his death a member of its board; in 1937 was awarded an honorary degree of doctor of science by Wayne University; died in the Charles Godwin Jennings Hospital, Detroit, November 17, aged 66, of spontaneous subarachnoid hemorrhage.

Bernstein, Joseph ✠ New York; Indiana University School of Medicine, Indianapolis, 1937; served during World War II; died October 16, aged 41.

Bourland, Robert Collyer ✠ Rockford, Ill.; University of Michigan Medical School, Ann Arbor, 1899; an Associate Fellow of the American Medical Association; past president of the Winnebago County Medical Society; served as major in the Illinois National Guard; member and past president of the staff of Rockford Memorial Hospital; on the courtesy staffs of St. Anthony and Swedish-American hospitals; past president of the Rockford sanitary district board of trustees; died November 9, aged 75, of pneumonia.

✠ Indicates Fellow of the American Medical Association.

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Boyd, Foster Jackson, Mason, Ohio; Ohio-Miami Medical College of the University of Cincinnati, 1912; member of the American Medical Association; affiliated with Good Samaritan, St. Mary's, and Bethesda hospitals in Cincinnati; died September 4, aged 68, of carcinoma.

Brown, Francis Xavier, Brooklyn; Long Island College Hospital, Brooklyn, 1913; member of the American Medical Association; fellow of the American College of Surgeons; served during World War I; on the staffs of the Kings County, Holy Family, St. Peter's, and Victory Memorial hospitals; died in the Veterans Administration Hospital in Fort Hamilton November 24, aged 62, of carcinoma of the lung.

Bulson, Charles Herman ✙ Napa, Calif.; Gross Medical College, Denver, 1889; past president of the Napa County Medical Society; served during World War I; affiliated with Parks Victory Hospital, where he died November 19, aged 83.

Carlin, George Edward, Amityville, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1927; member of the American Medical Association; physician in charge of the Louden-Knickerbocker Home; died in Brunswick General Hospital November 28, aged 49, of gangrene of the colon and perforated duodenal ulcer.

Chapple, Richard Rixon, Billings, Mont.; University of Michigan Medical School, Ann Arbor, 1930; member of the American Medical Association; in 1950-1951 vice-president of the Yellowstone Valley Medical Society; served during World War II; formerly on the staff of Northern Pacific Hospital in Missoula; died in Graduate Hospital, Philadelphia, November 24, aged 46, of rupture of an intracranial aneurysm.

Christie, Welman Blake, Boston; Boston University School of Medicine, 1927; member of the New England Obstetrical and Gynecological Society; served during World War I; on the staff of Audubon Hospital; died in Cambridge, Mass., November 19, aged 54, of coronary thrombosis.

Clark, Edward Russell ✙ Castleton, Vt.; Dartmouth Medical School, Hanover, N. H., 1885; an Associate Fellow of the American Medical Association; served as local health officer and as selectman; on the staff of the Rutland (Vt.) Hospital; represented Castleton in the state legislature; died November 26, aged 93, of cerebral hemorrhage.

Coley, Stephen Washington ✙ Jackson, Miss.; Memphis (Tenn.) Hospital Medical College, 1908; specialist certified by the American Board of Radiology; member of the American College of Radiology; for many years on the staff of Methodist Hospital in Memphis; died in Baptist Hospital November 2, aged 67.

Cooley, Halsey E., Rochester, N. Y.; University of Buffalo School of Medicine, 1891; member of the American Medical Association; for many years county coroner; died November 26, aged 83, of uremia and arteriosclerosis.

Cooper, Roy Cummings, Pittsburgh; Boston University School of Medicine, 1901; specialist certified by the American Board of Otolaryngology; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staff of Shadyside Hospital, of which he was past president; died November 11, aged 77, of general arteriosclerosis and Parkinson's disease.

Coss, Walter L., New Brighton, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1899; member of the American Medical Association; on the staff of Beaver Valley General Hospital; died October 16, aged 74, of coronary thrombosis.

Crawford, Horace Gilbert ✙ Bartlesville, Okla.; University of Nashville (Tenn.) Medical Department, 1911; also a graduate in pharmacy; fellow of the American College of Surgeons; past president of the Washington-Nowata Counties Medical Society; for many years physician for the Missouri-Kansas-Texas Railroad; died October 14, aged 71, of coronary thrombosis.

Fritz, William Wallace, Philadelphia; Medico-Chirurgical College of Philadelphia, 1904; died in Elm Terrace Hospital, Lansdale, Pa., November 24, aged 79, of cerebral hemorrhage, arteriosclerotic heart disease and diabetes mellitis.

Goode, Ernest Whitby, New York; Trinity Medical College, Toronto, Ont., Canada, 1892; member of the American Medical Association; died October 16, aged 82.

Greaves, John Percy ✙ Great Falls, Mont.; University of Minnesota Medical School, Minneapolis, 1915; past president of the Cascade County Medical Society and the Montana Academy of Oto-Ophthalmology; died in Columbus Hospital November 7, aged 63, of cardiac decompensation.

Henderson, Alfred Collard ✙ Stamford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1903; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; affiliated with Stamford Hospital; died November 23, aged 77, of coronary disease.

Karlstrom, Arthur Elof, Minneapolis; University of Minnesota Medical School, Minneapolis, 1936; member of the American Medical Association and American Academy of Pediatrics; specialist certified by the American Board of Pediatrics; clinical instructor of pediatrics at his alma mater; affiliated with Asbury Hospital and St. Barnabas Hospital, where he died October 4, aged 49, of uremia.

Kass, Joseph Borissow ✙ Hamtramck, Mich.; University of Texas School of Medicine, Galveston, 1913; practiced in Detroit, where he was on the staff of St. Joseph's Mercy Hospital; died November 3, aged 65.

Lally, William James ✙ Washington, D. C.; Georgetown University School of Medicine, Washington, 1912; affiliated with Georgetown, Providence, and Episcopal Eye, Ear, and Throat hospitals; served overseas during World War I; died November 6, aged 63, of coronary occlusion.

Levine, Samuel ✙ Brooklyn; University and Bellevue Hospital Medical College, New York, 1909; affiliated with Beth El Hospital; died November 28, aged 69.

Lowe, John J., Sand Springs, Okla.; University of West Tennessee College of Medicine and Surgery, Jackson, 1905; died August 16, aged 80, of carcinoma.

MacDuff, Robert Bruce ✙ Flint, Mich.; University of Michigan Medical School, Ann Arbor, 1917; specialist certified by the American Board of Radiology; member of the Radiological Society of North America; served during World War I; vice-chairman of McLaren General Hospital; served on the staff of Hurley Hospital, where he died October 28, aged 59, of cerebral hemorrhage.

McCarthy, William John ✙ South Ozone Park, N. Y.; Tufts College Medical School, Boston, 1924; affiliated with Queens General and Mary Immaculate hospitals in Jamaica and St. Mary's Hospital in Brooklyn, where he died October 26, aged 52, of heart disease.

McCloskey, John Francis ✙ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1901; emeritus clinical professor of surgery at Woman's Medical College of Pennsylvania; veteran of the Spanish-American War and served overseas during World War I; fellow of the American College of Surgeons; formerly Register of Wills; a founder and consulting surgeon at Chestnut Hill Hospital; affiliated with the Skin and Cancer Hospital and Woman's Hospital; died November 22, aged 74, of coronary disease.

McCrea, Edward Lee ✙ Table Rock, Neb.; University Medical College of Kansas City, Mo., 1900; an Associate Fellow of the American Medical Association; died in Bryan Memorial Hospital, Lincoln, October 15, aged 86, of carcinoma of the prostate.

McIlvaine, Mary Josephine ✙ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1925; certified by the National Board of Medical Examiners; died November 5, aged 50, of coronary occlusion.

McIntyre, Thomas C., Detroit; Detroit College of Medicine, 1904; affiliated with Providence Hospital, where he died November 6, aged 73, of carcinoma of the gallbladder.

Martin, Robert Gerald, Chicago; Meharry Medical College, Nashville, Tenn., 1893; died December 9, aged 82.

Meredith, Charles Arthur, Manchester, Mo.; Marion-Sims College of Medicine, St. Louis, 1892; died November 22, aged 83.

Mills, John Harold ✙ Portland, Ore.; University of Chicago, the School of Medicine, 1933; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; certified by the National Board of Medical Examiners; served during World War II; affiliated with the Veterans Administration Hospital, where he died October 14, aged 49.

Myers, Aumond Dale ✙ Baldwin Park, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1935; certified by the National Board of Medical Examiners; died near Paulina Lake, Ore., November 3, aged 44, in an airplane crash.

Ovsey, Abraham Moses, Santa Monica, Calif.; College of Physicians and Surgeons, Los Angeles, 1917; died in Cedars of Lebanon Hospital, Los Angeles, October 18, aged 71, of acute shock, and acute coronary thrombosis.

Reid, Robert Lincoln Doane ✙ New York City; Columbia University College of Physicians and Surgeons, New York, 1903; died September 29, aged 79.

Robertson, William D. ✙ Mount Vernon, N. Y.; Bellevue Hospital Medical College, New York, 1898; member of the staff of Mount Vernon Hospital, where he died November 25, aged 79.

St. Clair, Francis Alphonzo, Washington, D. C.; Georgetown University School of Medicine, Washington, 1890; member of the American Medical Association; also a graduate in pharmacy; on the staff of the Central Dispensary and Emergency Hospital; died November 10, aged 90, of myocardial degeneration and mitral insufficiency.

Shreck, William A., Holdrege, Neb.; University of Louisville (Ky.) Medical Department, 1896; member of the American Medical Association; at one time postmaster; formerly practiced in Bertrand, where he was for many years member of the board of education; died October 23, aged 87.

Shuster, Mitchell Norbert ✙ New York; University and Bellevue Hospital Medical College, New York, 1922; served during World War II; died October 23, aged 53.

Strickler, Florence Dunlop ✙ San Francisco; Leland Stanford Junior University School of Medicine, San Francisco, 1916; formerly vice-president of the San Francisco County Medical Society and president of the American Association of University Women; affiliated with Children's and Stanford University hospitals; died November 21, aged 59, of coronary thrombosis.

Tasse, Joseph Chrysanthe Edward, Worcester, Mass.; School of Medicine and Surgery of Montreal, Canada, 1889; died November 24, aged 86, of carcinoma of the bladder.

Taylor, Francis Albert, Bridgeport, Conn.; College of Physicians and Surgeons, Boston, 1905; died in Seffner, Fla., October 29, aged 71, of a heart attack.

Thomas, Camp Chandler, Lewiston, Maine; University of Michigan Homeopathic Medical School, Ann Arbor, 1917; member of the American Medical Association, New England Roentgen Ray Society, Radiological Society of North America, and American College of Radiology; specialist certified by the American Board of Radiology; served on the staff of St. Mary's General Hospital; died November 15, aged 69, of lymphatic leukemia and carcinoma.

Timm, Harry Emil Louis ✙ Chicago; University of Illinois College of Medicine, Chicago, 1915; fellow of the American College of Surgeons; affiliated with South Shore Community Hospital, where he died December 3, aged 60, of gastrointestinal hemorrhage and ruptured varix.

Tryon, Lewis Royer, Miami Beach, Fla.; Jefferson Medical College of Philadelphia, 1893; served overseas during World War I; later decorated by Estonia and Latvia for service with the Red Cross in those countries; formerly affiliated with the Veterans Administration in various cities; died in Coral Gables November 17, aged 79, of coronary sclerosis and nephrosclerosis.

Tucker, Nathaniel Albert, Henderson, Tenn. (licensed in Tennessee in 1914); died September 3, aged 72, of cerebral hemorrhage.

Wachtel, Jacob Burton, Oklahoma City; Beaumont Hospital Medical College, St. Louis, 1898; died in Wesley Hospital October 16, aged 73, of ruptured abdominal aortic aneurysm, and arteriosclerosis.

Walden, James Gould, Parkersburg, W. Va.; Baltimore University School of Medicine, 1892; died October 14, aged 89, of cerebral hemorrhage.

Warren, Elbert Taylor ✙ Stuart, Iowa; Drake University College of Medicine, Des Moines, 1910; died October 1, aged 66, of coronary artery disease.

Watson, Ira Charles, Henderson, Ky.; Meharry Medical College, Nashville, Tenn., 1914; died September 27, aged 60, of carcinoma of the lung.

Whelpley, George Frederick, Boston; University of Maryland School of Medicine, Baltimore, 1903; died in Boston City Hospital October 26, aged 78, of cerebral thrombosis.

White, John Lawrence, Chicago; Northwestern University Medical School, Chicago, 1924; chief sanitary officer for the city health department; member of the Society of American Bacteriologists; died in Mayo Clinic, Rochester, Minn., November 14, aged 62, of carcinoma.

Williams, Edward Russell, St. Petersburg, Fla.; Harvard Medical School, Boston, 1894; member of the Massachusetts Medical Society, American Medical Association and American Ophthalmological Society; served on the staffs of the Boston City Hospital and Cambridge (Mass.) Hospital; died in Gulfport October 18, aged 79, of arteriosclerotic heart disease.

Williard, George W. ✙ Columbus, Ohio; Ohio Medical University, Columbus, 1897; for many years member of the board of education, serving as president in 1914; served as physician for the Ohio Penitentiary and the State School for the Blind; medical director for the Columbus and Southern Ohio Electric Company for many years; a director of the Central Building Loan and Savings Company; died November 5, aged 77, of coronary thrombosis.

Wills, Josephus Nicholas ✙ Detroit; Detroit College of Medicine and Surgery, 1919; affiliated with Parkside, Wayne Diagnostic, and Trinity hospitals; died September 17, aged 67, of heart disease.

Wilson, John Nants ✙ Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1927; member of the American College of Chest Physicians; affiliated with the Veterans Administration; died November 3, aged 51.

Woods, Ralph Hueston ✙ La Salle, Ill.; University of Illinois College of Medicine, Chicago, 1913; also a graduate in pharmacy; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; affiliated with St. Margaret's Hospital in Spring Valley, Peoples Hospital in Peru, and St. Mary's Hospital; author of "Cardinals of Optics, Physiological Optics, and Applied Refraction"; composed many military band numbers; died in St. Mary's Hospital October 16, aged 75, of cerebral hemorrhage.

Woodward, Floyd Owen, Jamestown, N. D.; University of Minnesota Medical School, Minneapolis, 1914; member of the American Medical Association; specialist certified by the American Board of Internal Medicine; affiliated with Jamestown and Trinity hospitals; died recently, aged 64, of hypertensive heart disease.

Zemer, Stanley Gillum ✙ Lincoln, Neb.; Rush Medical College, Chicago, 1913; member of the American Academy of Ophthalmology and Otolaryngology; past president of the Lancaster County Medical Society; member of the school board; served during World War I; affiliated with St. Elizabeth's, Lincoln General, and Bryan Memorial hospitals; died October 10, aged 68, of arteriosclerotic heart disease.

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GOVERNMENT SERVICES

MEDICAL POLICY COUNCIL

The Armed Forces Medical Policy Council has approved the principle of providing armed forces scholarships in approved medical schools as part of a long-range program for the procurement of medical officers. The students accepting these scholarships would be obligated for service in the armed forces. The council is studying plans for implementing this policy.

The Departments of the Army, Navy, and Air Force are now studying the possibility of awarding point credits to reserve medical officers who attend annual meetings of the Association of Military Surgeons. This action follows a decision of the Armed Forces Medical Policy Council that the awards were desirable. The three military departments will determine whether this plan can be applied to their respective medical reserve systems.

At the recommendation of the Armed Forces Medical Policy Council, a new, portable, field x-ray unit and 60-second developer, recently demonstrated to the council, was sent to Korea for field testing in December 1951. This x-ray unit, almost one-half the weight of field units currently in use, can be assembled or dismantled in a matter of minutes. If the results of the Korea test come up to expectations, this type of unit will relpace the heavier x-ray equipment now in use by the armed forces in the field.

Dr. Melvin A. Casberg was appointed vice-chairman of the Armed Forces Medical Policy Council, effective Jan. 1, 1952. He will serve as the principal assistant to the chairman, Dr. W. Randolph Lovelace II. Dr. Casberg was born in India, of American missionary parents. He received an M.D. degree from St. Louis School of Medicine in 1936. In 1941 he became surgeon-in-chief at the Umri Mission Hospital in Berar, India, and in the following year joined the United States Army 21st General Hospital, serving with this unit through the North African campaign, and later was appointed station surgeon in Chungking, China. He was in private practice in surgery from 1946 to 1949 at Long Beach, Calif. On Aug. 1, 1949, Dr. Casberg was appointed dean of the St. Louis University School of Medicine. He resigned from this position to accept the vice-chairmanship of the Armed Forces Medical Policy Council.

ATOMIC ENERGY COMMISSION

Fellowship Program.—The names of 343 holders of fellowships sponsored by the Atomic Energy Commission have been announced by the Oak Ridge Institute of Nuclear Studies, which is administering the fellowship program for the 1951-52 school year.

Dr. Russell S. Poor, chairman of the institute's University Relations Division, said that fellowships had been awarded for study at 70 American universities and research institutions and seven others located abroad. The fellowships are for research and study on the predoctoral and postdoctoral level, with 300 predoctoral and 43 postdoctoral fellows. Of the predoctoral fellows, 223 are studying the physical sciences and 77 the biological sciences. On the postdoctoral level, 21 are in the physical sciences, 17 in the biological sciences, and 5 in the medical sciences. All holders of fellowships have been investigated by the Federal Bureau of Investigation in accordance with existing laws.

The AEC fellowship program is enabling American students to study and carry out research under the direction of the world's scientific leaders. The university faculty members who direct a student's research include many Nobel prize winners and other noted scientists. Among them are Enrico Fermi, Nobel prize winner at the University of Chicago, who built the first uranium reactor; I. I. Rabi, of Columbia University, another Nobel prize winner for his work in physics; H. A. Bethe, Cornell University physicist who postulated the theory of the chain reaction that takes place in the sun. Among the Europeans who will direct the research and study of the Americans are Dr. Werner Heisenberg, of Goettingen, Germany, also a Nobel prize winner, whose discovery of the uncertainty principle in quantum mechanics is considered by many as vital to the development of atomic energy as the Einstein mass-energy relationship; Niels Bohr, Danish winner of the Nobel prize, who carried news of uranium fission to this country early in 1939; and Otto Frisch, Jacksonian Professor of Natural Philosphy at Cambridge University, England.

Radioisotopes for Shipment.—A total of 270 radioisotopes were supplied for shipment to 26 different research organizations during 1951, by the Brookhaven National Laboratory, Upton, N. Y. The figures do not include the several hundred radioisotopes used in research by staff scientists of the laboratory, which is operated by Associated Universities, Inc., under contract with the U. S. Atomic Energy Commission.

Authorization to receive radioisotopes is issued by Oak Ridge National Laboratory, in Tennessee, which refers to Brookhaven requests for delivery in the northeast of short-lived radioisotopes. Radioisotopes many times more radioactive than those obtainable in the Oak Ridge reactor are also supplied by Brookhaven.

Of the Brookhaven shipments, 100 were of radioactive sodium (Na^{24}) and 91 shipments were radioactive potassium (K^{42}), which lose half their radioactivity every 15 and 12.4 hours, respectively. Because sodium and potassium are basic components of the human body, radioisotopes of each element can be used as tracers to gain information on the efficiency with which the respective element is being used in the body.

PUBLIC HEALTH SERVICE

Mental Health Clinics Survey.—There are now 1,228 mental health clinics operating in the United States, 902 or 73% of them serving children, according to a survey reported in the November 30 issue of *Public Health Reports*. The survey, undertaken in the spring and summer of 1950 to provide information for the Mid-Century White House Conference on Children and Youth, further indicates 475 clinics have been established since 1947. Of the total number of mental hygiene and general psychiatric clinics surveyed, one-third serve children only and 44% serve both adults and children. During 1950 at least 150,000 children received treatment. One out of nine clinics serving children provide diagnostic services only. The others furnish treatment.

The northeast section of the country has more than half of the clinics although it has only one-quarter of the total population. The ratio of 1.67 clinics per 100,000 population in this area is more than four times that for the South. Three states, Idaho, Nevada and Wyoming, have no operating clinics. Almost half of the clinics are in the 108 cities with a population of 100,000 or more. About three-fourths of the clinics are the responsibility of state, county, or city health and welfare agencies, or are connected with courts, school systems, or the Veterans Administration. The remainder are sponsored by voluntary welfare agencies, mental hygiene societies, and other nonofficial organizations.

Symposium on Blood Vessel Grafts.—A symposium on blood vessel grafts and related problems was held at the National Institutes of Health, Bethesda, Md., Jan. 10, 1952. Scientists working in the field reviewed current progress in arterial and venous transplants and in blood vessel preservation technics in a series of formal papers. The meeting was open for general discussion. Dr. Daniel C. Elkin, chairman of the department of surgery, Emory University, Atlanta, Ga., presided.

FOREIGN LETTERS

BRAZIL

Immunobiologic Relation Between Tuberculosis and Leprosy.—A paper was published by Drs. Nelson Souza Campos, José Rosemberg, and Jamil Aun on the immunobiologic relation between tuberculosis and leprosy. The lepromin test was performed on 38 children who had been BCG-vaccinated 12 months previously at the ages of 1 to 18 months. All were healthy children of leprous parents, from whom they had been separated at birth. In 100% of the cases there was a positive reaction by the third week from the date of introduction of the lepromin into the derma, with 21 patients showing a + reaction and 17 showing ++. The lepromin test performed at the time of BCG-vaccination resulted in positive reactions in all cases except four of those in which a single dose of BCG was administered; a year later reactions were observed in these four cases also.

There was complete dissociation between tuberculin sensitivity and lepromin reaction. In two cases positive reactions to the Mantoux test (tuberculin in 1:10 dilution) never occurred. Of the 36 remaining cases in which the allergy developed, 29 patients became entirely tuberculin-negative from 6 to 11 months before the lepromin test. The results of the above investigation confirm previous studies made by the authors with healthy children of parents having no history of leprous infection.

Isosporosis.—Drs. João Alves Meira and Marcelo Correa published their observations in 28 cases of human infection by coccidia belonging to the genus Isospora. These cases were found in 22,836 stool specimens examined from December, 1942, through June, 1950, at the Faculdade de Higiene and Instituto Adolfo Luts of São Paulo. The cases were divided into two groups; one composed of 15 cases in which the parasite was identified as Isospora hominis (Railliet and Lucet, 1891), the other, of 13 cases in which the Coccidium was identified as I. belli (Wenyon, 1923). In the first group the Coccidium was discharged in the feces usually as a single sporocyst containing four vermiform sporozoites. The average size of these sporocysts was 14.8 μ in length by 9.8 μ in width. In only three cases were ripe oocysts with the two sporocysts, each containing four sporozoites, found together with the isolated tetrazoic sporocysts. It is important to emphasize that in all 15 cases the coccidia discharged in the feces were in the mature stage. On the other hand, in the 13 cases of the second group only the unsegmented oocysts were found in the feces. Rarely, oocysts containing two sporoblasts were found in recently passed feces. In these cases the oocysts were usually unsegmented when discharged in the feces, but within 48 hours, at room temperature, sporocysts containing four sporozoites developed. The average size of the oocysts was 28.3 μ in length by 13.5 μ in width. The average size of the sporocysts was 12.9 μ in length by 10 μ in width. In the cases studied it was not possible to demonstrate the pathogenic action of I. hominis in man, as the clinical symptoms either were absent or occurred when other intestinal parasites also were present. In regard to infection by I. belli the authors observed the following three possibilities: (*a*) the presence of I. belli, without clinical symptoms; (*b*) the presence of gastrointestinal symptoms that may be caused by other parasites; and (*c*) the presence of gastrointestinal symptoms caused by I. belli infection.

Esophageal Hiatus Hernia.—The importance of esophageal hiatus hernia has been recognized in recent years. It was formerly considered rare, but is now known to be a relatively common condition, although it is often obscured by vague digestive, cardiovascular, and respiratory disturbances. Roentgen examination has contributed to exact diagnosis, but the details that make this diagnosis possible are not yet a part of the radiologist's routine, although the fundamental technique was established by Ackerlund in 1926. Drs. Mario R. Oliveira, José F. Pontes, and A. Ferreira Filho, of the department of surgery, Hospital das Clinicas, University of São Paulo, recently reported on the analysis of more than 4,500 cases observed at the gastroenterology department. Among 3,000 patients with diseases of the digestive system from 1941 to 1948, only two cases of esophageal hiatus hernia were diagnosed (0.07%). In 1949 and 1950, when more attention was given to dyspeptic symptoms and more special techniques were used by radiologists to reveal the structures of the esophageal hiatus region, 28 cases of hernia were found among 1,500 patients (1.87%).

Of the 28 patients, 19 (63.3%) were men, and 11 (36.7%) were women, with ages ranging from 23 to 76 years. The cases were of three types: paraesophageal hernias, 6 cases (20%); gastric hernias caused by congenital short esophagus, 3 cases (10%); and pulsion type hiatus hernias (incompetent hiatus), 21 cases (70%). Of the latter, 19 were reversible and 2 irreversible. The similarity of percentage distribution with that reported by Harrington (1948) and Merendino, Varco, and Wangensteen (1949) is interesting; they reported 20 to 33% for the first type, 7% for the second, and 75 to 80% for the third. Of the 30 patients, 25 gave definite information about the duration of the illness, which varied from 1 to 25 years, with an average of 7.8 years. The most frequent digestive symptoms were heartburn, 26 cases (86.2%); retrosternal and epigastric pains, 14 (46.7%); belching, 11 (36.7%); indigestion, 11 (36.7%); heaviness and flatulence of the stomach, 11 (36.7%); worsening of symptoms while in the recumbent position, 9 patients (30.0%); dysphagia, 5 patients (16.7%); and hematemesis or melena, 4 patients (13.7%). The most frequent cardiovascular and respiratory symptoms were palpitations, 11 cases (36.7%); tightness of the chest, 10 (33.3%); dyspnea, 9 (30%); and increased breathing difficulty while in the recumbent position, 9 (30%).

Clinical and Statistical Survey of Transfusion Reactions.—Dr. Ruy Faria, head of the blood bank, São Paulo Municipal Hospital, in a recent report, analyzed reactions after blood transfusions clinically and statistically. Among 2,069 patients who received transfusions during the first four years of the service, 78 reactions were registered (3.76%). This total is divided as follows: 64 pyrogenic reactions (3.09%), 9 allergic reactions (0.43%), 3 hemolytic reactions (0.14%), 1 circulatory overload (0.05%), and 1 pulmonary embolism (0.05%). The author made a careful survey of the different types of reactions, especially from the standpoints of treatment and prevention. He describes the exacting preventive measures against pyrogenic reactions that are now taken at the service. He asserts that pyrogenic reactions still occurring at the Municipal Hospital are due to minor incompatibilities, as pointed out by Muirhead and Hill and by Wiener. This is confirmed by the prevalence rate of these reactions, which is somewhat below the maximum 4% allowed by American physicians. The present rate in Dr. Faria's department is markedly lower than the 3.09% figure given above for the entire four-year period. Allergic donors or persons having had a meal with lipids a short time before are not accepted for transfusions. In spite of these and other precautions, allergic reactions continue to occur at a constant rate, somewhat below the conventional 0.45%. Hemolytic reactions were rare (0.14%), and two of the three cases reported occurred at the beginning of the service. The first patient, a woman at childbirth, died, but the exact nature of the reaction could not be ascertained. Although the record shows that the transfusion was immediately stopped, and nothing was injected afterward, the woman died two days later, icteric and anuric. The second case, which occurred during the first year of the service, was grave but not fatal. This patient was also a woman, Rh-negative and in the third month of pregnancy. Anti-Rh serum was not yet available, and the patient received 250 cc. of Rh-positive blood, although she had been sensitized by 10 previous pregnancies, all terminating with stillborn fetuses or babies who died at a very early

The items in these letters are contributed by regular correspondents in the various foreign countries.

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age. They were all Rh-positive, since their father was homozygous. In the third case, the reaction was detected immediately after the beginning of a drip transfusion. The patient, erroneously classified as AB because of powerful cold agglutinins, reacted strongly to the B blood injected, as she belonged to the A group. Since then, blood classification is always done with washed cells, and a routine direct protein test is made. Death, due to a circulatory overload of 200 cc. of plasma, occurred while she was in shock; venous turgor was undetected in the emergency.

ITALY

Society of Cardiology.—A branch of the Italian Society of Cardiology has been established in Bologna for the provinces of the Emilia and the Romagna regions. Prof. Antonio Gasbarrini, head of the medical clinic of the University of Bologna, was elected president. Professor Condorelli, head of the medical clinic of the University of Catania, gave a report on physiopathology of the pulmonary pressure discussing his technique for the continuous recording of the pulmonary and femoral arterial pressure in man. By means of research and demonstration of the variations of the pulmonary arterial pressure that occur secondary to breathing, he showed that the neuroregulatory apparatus of the pulmonary arterial pressure is definitely different from the apparatus that regulates the arterial pressure of the systemic circulation. Stimulation of the proprioceptors of the systemic circulation does not influence the tonus of the pulmonary artery, and, in the instances in which such modifications are noticed, these are due to reflex variations of the cardiac activity. The nitrites, which, in proper doses, exert a stimulating effect on the chemoreceptors of the great arterial circulation, do not cause any modification of pressure in the pulmonary artery. Epinephrine, by stimulating the adrenergic nerve endings, is responsible for an increase of the pressure in the pulmonary artery; the pulmonary hypertension due to epinephrine is often of longer duration than that occurring in the arteries of the greater circulation, because the secondary stimulation of the pressoreceptors that rapidly control the hypertension of the general arterial circulation remains without effect on the pulmonary circulation. On the other hand, the use of acetylcholine has never induced a drop in the pulmonary pressure in spite of the manifest hypotensive effect recorded by the tracing of the femoral arterial pressure. Even by potentiating the action of acetylcholine with the so-called anticholinesterases, pulmonary arterial pressure is not lowered, although there is a pronounced drop in the arterial pressure of the greater circulation. Research has shown that it is impossible to prove the existence of cholinergic terminations in the system of the pulmonary artery. Nicotinic acid is a drug that may cause transient pulmonary hypertension, probably by stimulating pulmonary chemoreceptors. The pulmonary hypertension due to nicotinic acid develops even when the drug induces hypotension of the arteries of the systemic circulation. By simultaneously recording the pulmonary and the femoral arterial pressure, Professor Condorelli demonstrated that frequently rhythmical waves of arterial tonus can be seen that have no relation to analogous variations of the pulmonary arterial pressure. Arterial hypertension, in the absence of signs of circulatory insufficiency, is to be considered as a normotensive condition and occasionally as pulmonary hypotension. This concept, deduced from pathological study, constitutes a factor of fundamental importance to the concept of the complete independence of the regulation of the arterial pressure in the systemic and the pulmonary circulation.

Professor Altana presented a paper on electrocardiographic modifications related to attacks of tachycardia. After prolonged attacks of paroxysmal tachycardia, alterations of the electrocardiographic tracing are observed that especially involve the T wave and that regress within a few days to some weeks. Cognizance of this type of electrocardiographic tracing is of great practical importance, because, if the origin is not recognized as referrable to the preceding tachycardiac attacks, an erroneous diagnosis of severe organic myocardiac lesion, even of the infarction type, may be made.

Dr. Lenzi and Dr. Facci presented a report on a girl aged 16, in whom a systolic murmur caused by the mitral valve was observed when, at the age of 1, she contracted an exanthematous disease. The electrocardiogram revealed a complex picture, characterized by great morphological variability, partial auricular arrhythmia, and periods of auricular tachysystole, with 2:1 block. The phonocardiographic study revealed that when preexcitation was more noticeable and a considerable reduction of the PQ interval was determined, a murmur was heard, which, when recorded, preceded the rapid complex observed at 0.06 second from the end of the auricular tracing. This heart sound was not heard when shortening of the QRS complex with lengthening of the PQ interval was elicited either by spontaneous variations or by the actions of drugs (acetylcholine). According to the speakers, from the clinical point of view, the patient's disease could be classified as a complex congenital lesion (moderate mitral stenosis associated with intraventricular obstruction). This case is of great interest, as it shows the presence of the preexcitation phenomenon. This condition may have been brought about by endocarditis of the right side of the heart and maintained by hypertension in this side of the heart.

Dr. Garbin and Dr. Gasbarrini spoke of the arteriolar vasoactive effects of histamine and synthetic antihistamines. They studied, with the photoplethysmographic method, 23 healthy persons with a normal neurovegetative tonus. The arteriolar pulse of the finger tips and the maximum and minimum systolic and diastolic pressure of each patient were recorded under basic conditions; then 1 cc. of histamine was injected intramuscularly, and recordings of pulse and pressure were made every 15 minutes for one hour. On succeeding days, the action of antihistamine and epinephrine was ascertained and, on another day, histamine and antihistamine were administered simultaneously. On the basis of the results, the speakers concluded that histamine, in addition to its known action on the capillaries, is capable of pronounced effects on the arteriolar tonus, producing a diphasic reaction, consisting of a primary dilatation followed by a moderate contraction. From the clinical point of view, the speakers' report emphasized the importance of the photoplethysmographic recording for the comparative study of the effects of various drugs on the blood vessels.

Epidemic of Goiter.—Dr. Bizzarri gave a report at the Filippo Pacini Medical Academy on a goiter epidemic that occurred in the province of Pistoia from 1941 to 1945; in addition to making use of his own observations, the speaker also made use of the personal communications of physicians in the regions in which the disease occurred. Subjective symptomatology was always scarce; objective findings were without value, except for the abnormal pulse ratio. The course of the disease was always favorable, with complete regression within a maximum period of three months. The various methods of treatment did not produce any specific effect since equally satisfactory results were observed in instances in which medical-dietetic treatment was omitted. Young persons, predominantly females, were those most affected. The disease occurred exclusively in the plains, outside of some communities in the mountains in which goiter is endemic. In his study of the etiology and pathogenesis, the speaker examined the water system of the region and concluded that this was not the means of transmission of a bacterium with thyrotropic activity. The fact that cases of goiter were not observed in army stations, colleges, and other institutions excluded the possibility of infective goiter. The analysis of the water and of the soil, carried out in an attempt to disclose a possible sudden modification in their iodine content, gave negative results. As for atmospheric precipitation, a major drought was reported in the period from 1942 to 1945; however, the speaker did not think that this was a determining influence, although it might have been an auxiliary factor. No importance was attributed to the factor of nutrition or vitamin deficiency. The speaker believed that psychic elements were concurrent factors, and he proposed the hypothesis that a persistent emotional condition may have caused some diencephalic-hypophysial stimuli creating or favoring those conditions that caused the appearance of goiter. The emotional factor is perhaps correlated with the particular psychic strain endured by the population at the time in which the war was fought in that zone.

CORRESPONDENCE

CLEVELAND ACADEMY MEDICAL CARE PLAN

To the Editor:—Voluntary Health Insurance Plans developed and sponsored by county medical societies and tailored to fit local needs are an important cornerstone in the 12 point program of the American Medical Association. I would therefore like to report on a new plan developed by the Academy of Medicine of Cleveland, which went into effect about September 1 and which will provide complete medical care in hospitals to Cleveland families earning $5,000 a year or under, at a cost of less than 15 cents a day. A year of planning and preparation preceded the presentation of the plan for approval to academy active members, and it is interesting to note that 51% of the active members signed up to participate in the plan within 20 days after it was offered to them.

The Cleveland Academy Medical Care Plan is unusual from a legal standpoint. The individual physician who wishes to participate signs no contract with the insurance company; his only contract is with the academy itself. Under the contract, he agrees to limit his fees to families in the $5,000-and-under income group by a standardized schedule of fees. The physician's relationship, thus, is with his own county medical society, rather than with an outside commercial organization, and the plan is administered by the academy.

The contract provides that any participating physician can withdraw from the plan at the end of any year, if he wishes, and prevents lowering of fees or inclusion of added services without his consent. He is paid by the patient, but can also be paid by the insurance company through the patient's endorsement. The insurance companies that have accepted the invitation of the academy to offer the plan to the public are Aetna Life, Connecticut General, Equitable Life Assurance Society, Great-West Life, John Hancock, Liberty Mutual, Massachusetts Mutual, Medical Mutual of Cleveland (the local Blue Shield type of company), Metropolitan Life, Mutual Benefit Health and Accident, New York Life, Northwestern National, Pacific Mutual, Provident Life & Accident, Prudential, and Travelers.

In brief outline, the Cleveland Academy Medical Care Plan provides the following benefits to a physician's patients who become subscribers:

1. Complete payment of all professional surgical and anesthesiological expenses incurred in hospitals by participating families earning $5,000 a year or less.

2. Complete payment of nonsurgical medical expenses incurred in hospitals of these families if they carry a medical rider on their policy.

3. Payment of a substantial share of all these expenses for families whose income is more than $5,000 a year.

4. A payment of $60 toward the obstetrical fee of all insured families.

5. Payment for professional services for procedures ordinarily performed in hospitals, when performed in a physician's office.

Major advantages that the plan offers to members of the academy include the following features:

1. A standardized fee schedule in line with average fees now charged to families in the $5,000-or-under income bracket here.

2. Greater freedom from collection problems.

3. A powerful weapon to halt the trend toward corporate (hospital) practice of medicine.

4. A long-range answer to those who say that only the government can provide low-cost medical care.

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LEPROSY

To the Editor:—The term Hansen's disease is widely used to avoid confusion between the disease called leprosy in modern medicine and the word leprosy as used in the Bible. Indeed, Hansen's disease has been made the official name by the legislature of the Hawaiian Islands, where the problem is seriously practical and no mere academic quibble.

The physicians who urge this action firmly agree that medical nomenclature should not be changed capriciously or for trivial reasons. Thus, malaria is not caused by "bad air," involutional melancholia is not caused by "black bile," and psoriasis is not characterized by severe itching. Yet it would be preposterous to change any of these terms simply because they are technically inaccurate. But the use of one word for both the disease so ably studied by Hansen and for a status under the Hebrew ceremonial law cannot be dismissed as simply an annoyance to etymologists. Here the name itself is a disastrous barrier to good medical care and good public health measures. A term that would avoid confusion and unjustified panic would help greatly in carrying out the sound recommendations of the editorial "Leprosy in the United States" (*J. A. M. A.* **142:**1365-1366 [April 29] 1950).

Leviticus 13 and 14, which discuss the leprosy of persons, garments, and houses, contain no description that can be identified as what is defined as leprosy in modern medicine. Indeed, the only disease that can be recognized with reasonable certainty is favus of the scalp (Leviticus 13:29-37). That the Biblical word referred to a status under the ritualistic law is made evident by the mention of leprosy in the long list of blemishes that would bar even a descendant of Aaron from serving as priest (Leviticus 21:16 to 22:9). This conclusion is supported in a unique way in the New Testament, where diseases are spoken of as being "healed" and leprosy as being "cleansed." The single exception is very illuminating. The word "healed" is used (Luke 17:11-19) regarding one of ten lepers. This one man was a Samaritan and hence could not be regarded as "cleansed" under the ritualistic law.

It is probably significant that in Europe the practical disappearance of anything diagnosed as leprosy occurred during the great epidemic of syphilis (1493-1600). A plausible reason is that the diagnosis of syphilis imposed no onerous restrictions on the patient. It was not even a cause of shame or social embarrassment for fully a century, as is seen from the fact that the poem that gave syphilis its present name was dedicated to a cardinal of the church.

I hope that the medical profession can coin a better name than Hansen's disease. Yet even an eponym is preferable to a name that makes patients with modern "leprosy" go into hiding in order to save their families from ostracism and that makes it impossible for patients to secure employment even after they have had a medical discharge from the Carville Marine Hospital.

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SELF-RETAINING ELECTROCARDIOGRAPHIC ELECTRODE

To the Editor:—Recently, in THE JOURNAL (**147:**1042 [Nov. 10]) mention was made in an article by Welsh of a self-retaining electrocardiographic electrode, which is an ingenious idea and solves most of the problems; however, in exercise tolerance tests and on extremely emaciated or hairy-chested persons, some difficulty may be experienced in using the Welsh electrode. In these cases a very useful device is the simple, homemade electrode holder that I described in *Southwestern Medicine* (**32:**55 [Feb.] 1951). This can be made from two strips of rubber cut from an old innertube, four clothespins, and a tongue blade.

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BUREAU OF INVESTIGATION

"PROFESSOR TORGERSON"

Physicians of German or Austrian descent who may receive inquiries from colleagues in Lower Austria concerning an advertisement of a Prof. O. Torgerson of 4047 Westminster, St. Louis 8, or elsewhere, should take notice of what appears to be a victimization of such persons.

There appeared an advertisement in the October, 1951, issue of *Wiener aerzte Zeitung*, described as "Officielles Organ der Wiener Aerztekammer," which invited Austrian physicians to become established in rural areas in the United States. They were promised yearly incomes of $15,000 to $25,000. Those who appeared interested were assured employment in American hospitals at a weekly salary of $30, for which service Torgerson proposed to charge such persons the amount of $5 a week for 40 weeks. Those who were interested were invited to write him and sign an agreement as follows:

"I, ...

do hereby agree to pay two hundred dollars to Prof. O. C. Torgerson (now of St. Louis, Mo., U. S. A.) for the said Prof. O. C. Torgerson's services in aiding me to get to the United States and obtaining employment for me there. But it is agreed and understood that I am only obligated for the payment of the aforesaid sum of two hundred dollars upon having employment in the U. S. A. and then only after I receive $30.00 a week or more salary from said employment in the U. S. A. Furthermore, this obligation may also be liquidated by payments of $5.00 a week if I wish."

An inquiry at the St. Louis address given above has been unsuccessful. Torgerson is not identified as a Doctor of Medicine. Just what his interest is in the matter, beyond obtaining the fees mentioned, is not clear.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

INTERNSHIPS AND RESIDENCIES

The following internship and residency training programs have been approved since the publication of the list of Approved Internships and Residencies in THE JOURNAL, Sept. 29, 1951. A number of hospitals not included in this list have recently been surveyed by representatives of the Council on Medical Education and Hospitals and have been recommended for internship or residency approval. These hospitals will be notified as soon as final action on their applications has been completed.

Information regarding the hospitals on the following list will appear in the next Internship and Residency Number of THE JOURNAL.

ADDITIONAL INTERNSHIPS APPROVED

St. Vincent's Hospital	Birmingham, Ala.
General Hospital of Riverside County	Arlington, Calif.
Athens General Hospital	Athens, Ga.
Methodist Hospital	Gary, Ind.
Mercy Hospital	Davenport, Iowa
Mercy Hospital	Iowa City, Iowa
Suburban Hospital	Bethesda, Md.
St. Louis Children's Hospital	St. Louis, Mo.
Perth Amboy General Hospital	Perth Amboy, N. J.
Park Avenue Hospital	Rochester, N. Y.
Chesapeake and Ohio Hospital	Clifton Forge, Va.
Elizabeth Buxton Hospital	Newport News, Va.

ADDITIONAL RESIDENCIES APPROVED

Allergy

Veterans Administration Hospital	Long Beach, Calif.

Anesthesiology

San Juan City Hospital	San Juan, Puerto Rico

Cardiovascular Disease

Duke Hospital	Durham, N. C.
Cincinnati General Hospital	Cincinnati, Ohio

Gastroenterology

Massachusetts Memorial Hospital	Boston, Mass.

General Practice

Sacramento County Hospital	Sacramento, Calif.
Grady Memorial Hospital	Atlanta, Ga.
Macon Hospital	Macon, Ga.
Grant Hospital	Chicago, Ill.
Our Lady of Victory Hospital	Lackawanna, N. Y.
University Hospital	Oklahoma City, Okla.
St. Joseph's Hospital	Lancaster, Pa.
Sharon General Hospital	Sharon, Pa.
Sacred Heart Hospital	Yankton, S. D.
Kanawha Valley Hospital	Charleston, W. Va.

Internal Medicine

Veterans Administration Hospital	Little Rock, Ark.
St. Joseph Mercy Hospital	Detroit, Mich.
St. Mary's Hospital	Duluth, Minn.
Robert B. Green Memorial Hospital	San Antonio, Texas

Obstetrics and Gynecology

Swedish Hospital	Seattle, Wash.

Ophthalmology

Montefiore Hospital	Pittsburgh, Pa.

Otolaryngology

Bronx Eye and Ear Infirmary	New York, N. Y.

Pathology

Central Maine General Hospital	Lewiston, Maine
Springfield Hospital	Springfield, Mass.
St. Mary's Hospital	Brooklyn, N. Y.

Proctology

Veterans Administration Hospital	Los Angeles, Calif.

Pulmonary Diseases

Woodlawn Hospital	Dallas, Texas

Surgery

St. Vincent's Hospital [1]	Los Angeles, Calif.
St. Vincent's Hospital [2]	Bridgeport, Conn.
Florence Crittenton Hospital [1]	Detroit, Mich.
Good Samaritan Hospital [1]	Dayton, Ohio
Marymount Hospital [1]	Garfield Heights, Ohio

Thoracic Surgery

University Hospital	Baltimore, Md.
Duke Hospital	Durham, N. C.
North Carolina Baptist Hospital	Winston-Salem, N. C.
Muirdale Sanatorium	Milwaukee, Wis.

Urology

Veterans Administration Hospital	Des Moines, Iowa
Veterans Administration Hospital	Buffalo, N. Y.
Delaware Hospital	Wilmington, Del.
University Hospital	Baltimore, Md.
Lincoln Hospital	New York, N. Y.
Germantown Dispensary and Hospital	Philadelphia, Pa.
Wilkes-Barre Hospital	Wilkes-Barre, Pa.
St. Joseph's Infirmary	Houston, Texas

1. Approved by the Council as offering satisfactory training of one or two years' duration, in preparation for residency training in the surgical specialties (Approved Programs in Surgery, J. A. M. A., **142**: 1216 [April 18] 1950).

2. Approved for three years of training by the Council, the American Board of Surgery, and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Ophthalmology, Chicago

46:363-476 (Oct.) 1951

Bilateral Transverse Optic Neuritis: Report of Two Cases with Cortisone Therapy. V. L. Smith.—p. 363.
*Genetics of Retinoblastoma. H. F. Falls and J. V. Neel.—p. 367.
Orbital Pseudotumors. T. W. Cowan.—p. 390.
Bilateral Internal Carotid Aneurysm Involving Cavernous Sinus: Right Carotid Artery-Cavernous Sinus Fistula and Left Saccular Aneurysm. B. J. Alpers, N. S. Schlezinger and I. M. Tassman.—p. 403.
Congenital Arteriovenous (Racemose) Aneurysm of the Retina: Report of Three Cases. W. Z. Rundles Jr. and H. F. Falls.—p. 408.
Pregnenolone Therapy in Uveitis. L. Kellerman.—p. 419.
Ocular Tumors: Study of Incidence of Various Types and Their Mortality Rates. E. B. Spaeth.—p. 421.
Relief of Senile Entropion. S. A. Fox.—p. 424.
Retinopathy in Dermatomyositis. S. De Vries.—p. 432.
Divergence Paralysis and Paralysis of Near Reflex Associated with a Malnutrition Syndrome (Presumably Wernicke's Polioencephalitis). D. G. Cogan.—p. 436.
Unusual Pigmented Tumor of the Iris. F. C. Winter and A. E. Maumenee.—p. 438.
Physiologic Chemistry of the Eye: Review of Papers Published During 1950. V. E. Kinsey.—p. 441.

Genetics of Retinoblastoma.—Between 1938 and 1947, 53 cases of retinoblastoma were discovered in Michigan, an incidence of 1 case for every 20,288 live births. The family histories obtained in these and an additional 20 cases that have occurred since 1948 are consistent with the hypothesis that development of retinoblastoma depends on a single dominant gene that does not always find expression. Because of the fatal nature of retinoblastoma, the gene responsible for the condition is under strong negative selection pressure. That the condition persists at all is due to the fact that new genes responsible for the disease are produced by mutation in each generation. The rate of mutation (m) to this gene is calculated to be $2.3X10^{-5}$ per generation. No factors that might influence the mutation rate were found. If persons with the disease never reproduced, the frequency of the gene would stabilize at m. If a 100% effective treatment were developed, and if the survivors reproduced at a normal rate, the frequency of the gene would increase by m each generation so that in eight generations the disease would have eight times its present frequency. Since the present treatment yields only a 70% survival rate, and since some of the surviving patients, especially those with bilateral disease, seldom reproduce, it may be estimated by a formula derived by the authors that the frequency in eight generations will actually be about 1.54 times the present frequency. Formulas similar to the one used here might be used to predict the future incidence of other hereditary diseases in which treatment increases the survival rate.

Alabama State Medical Assn. Journal, Montgomery

21:81-108 (Oct.) 1951

The Juvenile Amputee. J. F. Comer.—p. 81.
Amebiasis in Northwest Alabama. H. V. Herndon.—p. 87.
Trends and Treatment in Ear, Nose, and Throat Allergy. R. M. Clements.—p. 90.
Recent Studies on Viral Encephalitides. F. M. Schabel Jr.—p. 92.

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individual subscribers, provided they reside in continental United States or Canada. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover only the last 11 years, and no photoduplication services are available. No charge is made to members, but the fee for other borrowers is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Heart Journal, St. Louis

42:483-642 (Oct.) 1951

Estimation of Residual Volume of Blood in Right Ventricle of Normal and Diseased Human Hearts in Vivo. R. J. Bing, R. Heimbecker and W. Falholt.—p. 483.
Studies on Mechanism of Ventricular Activity: I. Nature of P-R Interval. J. A. Osborne, E. Corday, J. Fields and others.—p. 503.
Spatial Vectorcardiography: Right Bundle Branch Block. VIII. R. P. Lasser and A. Grishman.—p. 513.
*Blood Pressure Reduction to Selected Level by Continuous Injection of Methonium Halides (C5 and C6) and Use of Electrically Operated Syringe. F. H. Smirk.—p. 530.
Reduction of Mortality Rate in Coronary Atherosclerosis by Low Cholesterol-Low Salt Diet. L. M. Morrison.—p. 538.
Heart Disease of Unknown Etiology. R. R. Davies, R. J. Marvel and P. D. Genovese.—p. 546.
Systemic Arterial Embolism in Rheumatic Heart Disease. R. Daley, T. W. Mattingly, C. L. Holt and others.—p. 566.
*Sulfhemoglobinemia: Study of 62 Clinical Cases. R. O. Brandenburg and H. L. Smith.—p. 582.
Effects of Cigarette Smoking on Ballistocardiogram. A. Caccese and A. Schrager.—p. 589.
*Procaine Amide Compared with Quinidine as Therapy for Arrhythmias. A. I. Schaffer.—p. 597.
Effects of Tubing Bore on Stethoscope Efficiency. M. B. Rappaport and H. B. Sprague.—p. 605.

Methonium Halides in Blood Pressure Reduction.—From his initial experience with the methonium halides, pentamethonium and hexamethonium, Smirk learned that effective blood pressure reduction without important symptoms is possible in most types of high blood pressure. With two or three subcutaneous injections daily the blood pressure usually falls during the hour following injection, and gradually returns to its original high level during the next three or four hours. Continuous, mechanically controlled subcutaneous injections were given to hospitalized patients confined to bed or a chair in order to discover whether the blood pressure could be reduced to a predetermined level. The author describes an electrically operated, syringe-emptying device, which is designed to carry syringes of 1 to 100 cc. capacity and to empty a syringe at a uniform rate in from 2 to 32 hours. Fine pressure tubing conveys the drug solution from the syringe to the injection needle. The slowest injection rate is $\frac{1}{32}$ cc. and the fastest 50 cc. per hour. The intermediate rates are obtained by gears and regulation of the driving speed by a governor. With continuous subcutaneous injection of methonium halides the blood pressure has been held within a selected range as long as 10 days. The method appears to afford greater control over the blood pressure level than has seemed practicable previously and has been valuable in treatment of hypertensive crises.

Sulfhemoglobinemia.—While methemoglobin is a pigment found in the blood of normal persons, sulfhemoglobin is an abnormal pigment not found in ordinary circumstances. It has been suggested that formation of sulfhemoglobin involves the introduction of one atom of sulfur into the hemoglobin molecule and a change in the linkage of globin to heme. The result of this chemical union is a nonreversible product, so that sulfhemoglobin remains intact until the erythrocytes containing it are destroyed. Sulfhemoglobin is identified by its spectrum, which shows a strong band at 618 mμ. The dark band of methemoglobin is seen at 630 mμ. The latter band disappears after two or three drops of 5% solution of potassium cyanide have been added to the blood, and this test differentiates methemoglobin from sulfhemoglobin, which remains fixed. The occurrence of either pigment in abnormal amounts can be related to the presence of amino and nitro compounds. Nitrites, sulfonamides, and aniline derivatives most commonly cause methemoglobinemia. Acetophenetidin and acetanilid most frequently cause production of sulfhemoglobinemia, which is commoner than methemoglobinemia. The records of 62 patients with sulfhemoglobinemia examined at the Mayo Clinic from May, 1930, to February, 1950, were reviewed. "Bromo-seltzer" and acetanilid had been ingested by the majority of patients, and sulfona-

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mide and acetophenetidin alone or in combination with other drugs by the remainder. The medicaments had been used chiefly for headache or neurotic origin. A large percentage of patients who had a concentration of 2 gm. or more of sulfhemoglobin per 100 cc. of blood were constipated, but constipation was an infrequent complaint in the majority, who had less than 2 gm. of sulfhemoglobin per 100 cc. of blood. Despite severe cyanosis and very high levels of sulfhemoglobin in the blood of two patients, there was little or no evidence of respiratory distress.

Procaine Amide Therapy of Arrhythmias.—To compare the clinical efficacy of procaine amide and quinidine in treatment of auricular arrhythmias and to determine whether procaine amide is more effective in ventricular than auricular arrhythmias, Schaffer tested these two drugs quantitatively in two patients with ventricular and one patient with auricular arrhythmias. The results indicate that quinidine is approximately four times as potent as procaine amide on a weight basis; for every 0.065 gm. of quinidine needed for a given therapeutic effect, approximately 0.25 gm. of procaine amide can be substituted. Procaine amide is no more effective in ventricular than in auricular arrhythmias. The oral use of procaine amide is limited by its tendency to cause nausea and vomiting and by the large number of capsules required for an average effective dose, but procaine amide can be substituted in patients who are sensitive to quinidine. Furthermore, procaine amide appears to be superior to quinidine for intravenous administration.

American Journal of Obstetrics & Gynecology, St. Louis

62:477-708 (Sept.) 1951. **Partial Index**

*Observations on Pathology and Spread of Endometriosis Based on Theory of Benign Metastasis. C. T. Javert.—p. 477.

Certain Concepts in Handling of Breech and Transverse Presentations in Late Pregnancy. C. S. Stevenson.—p. 488.

Study of Management of Prolonged Labor. A. F. Daro and H. A. Gollin.—p. 516.

Vaginal Hysterectomy, Treatment of Choice for Benign Enlargements of Uterus. H. M. Brill and M. Golden.—p. 528.

Pregnancy Complicated by Subarachnoid Hemorrhage. J. Schwartz.—p. 539.

Abortions—Study Based on 1,304 Cases. J. H. Collins.—p. 548.

Pain and Pain Relief in Essential Dysmenorrhea. F. Schuck.—p. 559.

Tubal Sterilization: Review of 1,169 Cases. J. G. Lee Jr., J. H. Randall and W. C. Kettel.—p. 568.

Puerperal Hysterectomy. R. A. Cosgrove.—p. 584.

Analysis of 45 Face Presentations. A. C. Posner and S. Cohn.—p. 592.

Criteria of Inlet Contraction. What Is Their Value? D. F. Kaltreider.—p. 600.

Buccal Androgen Alone and with Estrogen in Tension and Anxiety. G. T. Newman.—p. 607.

Preclinical Recognition of Toxemia of Pregnancy. H. M. Brill, M. J. Golden, H. L. Woolf and others.—p. 614.

The Eye Grounds During Toxemia of Pregnancy. A. J. Magee.—p. 621.

Postural Shock in Pregnancy. W. A. McRoberts Jr.—p. 627.

Double Sac with Secondary Rupture of the Bag of Waters During Labor: Clinical Entity, and Its Explanation from Examination of Membranes. W. Schuman.—p. 633.

Cerebral Venous Thrombosis in the Puerperium: Report of Two Cases with Necropsy Findings. R. L. Burt, J. F. Donnelly and D. L. Whitener.—p. 639.

Effect of Amputation of Cervix Uteri upon Subsequent Parturition: Preliminary Report of Seven Cases. J. J. Fisher.—p. 644.

Endometriosis and the Theory of Benign Metastasis.—Endometriosis is a disease of nulliparas or women who have borne few children and occurs during the childbearing period of life. A diagnosis of endometriosis or adenomyosis was made at a woman's clinic in 1,371 of 24,436 patients, an incidence of 5.61% or 1 in 18 patients. On the basis of these cases Javert formulates his concept of endometriosis on the principles of cyclical homeoplasia and benign metastasis. The sequence of the proliferative, secretory, and menstrual phases of the functioning endometrium has been called cyclical homeoplasia. Javert shows that benign endometrium may spread (1) by direct invasion of the myometrium (adenomyosis) and of the endosalpinx, (2) by exfoliation of cells through the fallopian tubes with implantation on the ovaries and peritoneum, (3) by metastasis to lymph nodes, and (4) by hematogenous metastasis locally and to distant organs such as the kidney. Endometriosis spreads by the same channels as endometrial carcinoma. The author stresses that the apparent increase in endometriosis in recent years coincides with a tendency toward smaller families, widespread use of contraceptives, fewer cervical dilatation and uterine suspension operations, and commoner use of intravaginal tampons during menstruation. Age, hormone balance, cervical stenosis, retroversion, use of intravaginal tampons, sterility, pelvic surgery, radiation, and use of testosterone are factors in the pathogenesis of endometriosis. Young patients may require treatment by dilatation and curettage, excision of pelvic lesions and adhesions, and uterine suspension, after which they are urged to conceive at once. Pregnancy is the best prophylactic and curative treatment of endometriosis, since it interrupts the cyclical homeoplasia. In young women the reproductive organs should be preserved as much as possible; in older women total hysterectomy and bilateral salpingo-oophorectomy may become the procedure of choice, rather than castration by irradiation, which has been observed to stimulate development of adenocarcinoma in the endometrium in several patients. Endometrial carcinoma occurs more frequently in patients with endometriosis.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

35:405-502 (Sept.) 1951

Production of Herxheimer Reactions by Injection of Immune Serum in Rabbits with Experimental Syphilis. W. H. Sheldon, A. Heyman and L. D. Evans.—p. 405.

Production of Herxheimer-Like Reactions in Rabbits with Spirillum Minus Infections by Administration of Penicillin or Immune Serum. W. H. Sheldon, A. Heyman and L. D. Evans.—p. 411.

Endocrine Studies of Patients with Syphilitic Interstitial Keratitis. J. V. Klauder, B. A. Gross and H. A. Hanno.—p. 416.

*Treatment of Neurosyphilis with Penicillin and with Penicillin plus Malaria. R. D. Hahn.—p. 433.

Study of Cases of Penicillin-Treated Early Syphilis with Pretreatment Cerebrospinal Fluid Abnormalities. R. V. Rider.—p. 471.

Results of Treatment of Early Syphilis with Single Injection of Procaine Penicillin G in Oil and Aluminum Monostearate. E. W. Thomas, C. R. Rein, S. Landy and D. K. Kitchen.—p. 475.

Terramycin in Treatment of Syphilis: Report of 5 Cases. H. M. Robinson and H. M. Robinson Jr.—p. 479.

Terramycin in Treatment of Chancroid, Lymphogranuloma Venereum, and Granuloma Inguinale. M. L. Niedelman, H. E. Pierce Jr., L. D. Hoffstein and W. V. Matteucci.—p. 482.

Aureomycin in Treatment of Gonorrhea in Male: Further Observations. R. C. V. Robinson and W. P. Galen.—p. 488.

Oral Terramycin in Rapid Treatment of Gonorrhea and Other Venereal Diseases. L. T. Wright, A. Prigot, J. C. DiLorenzo and others.—p. 490.

Treatment of Neurosyphilis.—A study based on an analysis of 589 patients with neurosyphilis, of whom 479 were treated initially with penicillin alone and 110 with penicillin plus malaria, revealed the following facts: 1. Penicillin rendered the spinal fluid inactive in all forms of neurosyphilis. Results tend to improve with passage of time, and relapse is infrequent. Penicillin alone is used in the retreatment for spinal fluid failure, since the addition of malaria therapy offers no advantages. 2. Penicillin alone almost completely prevents the development of new physical signs of neurosyphilis but has only a partial or no ameliorating effect on those physical signs already present. 3. Increment in body weight is almost identical after both treatment methods. 4. Penicillin alone is the treatment of choice in asymptomatic neurosyphilis, syphilitic meningitis, and neurosyphilis manifested solely or predominantly by pupillary changes. 5. Penicillin plus malaria remains the treatment of choice in the treatment of syphilitic primary optic atrophy. 6. Neither penicillin alone nor penicillin plus malaria therapy can be fully evaluated with respect to eighth nerve deafness. 7. Herxheimer reactions are relatively frequent after penicillin therapy, but clinically deleterious effects are to be feared only in paresis and taboparesis. 8. In syphilis of the spinal cord exclusive of tabes dorsalis treatment by either of the two methods is relatively ineffective. 9. Penicillin alone is effective in paresis and the paretic component of taboparesis, but the addition of malaria therapy may afford slight additional benefit. The results of treatment improved with time. Severity of paretic symptoms, type of psychosis, and work ability before treatment affect the clinical outcome. 10. In tabes dorsalis penicillin alone effects the disappearance of mild to moderate tabetic symptoms in approximately one-third of the patients. Severe symptoms do not disappear completely. The effects of penicillin plus malaria therapy are essentially the same as those of penicillin alone in tabetic symptoms. 11. No conclusions can be drawn as to the effect of penicillin dosage. Optimum duration of treatment is nine or more days.

American Surgeon, Atlanta, Ga.

17:893-990 (Oct.) 1951

Evaluation of Protein-Bound Iodine Determination in Thyroid Disease. T. C. Davison and A. H. Letton.—p. 893.
Surgical Correction of Congenital Eventration of Diaphragm. J. G. Shellito and W. C. Bartlett.—p. 898.
*Supraduodenal and Transduodenal Exploration of Common Bile Duct. M. B. Welborn.—p. 901.
Common Benign Breast Lesions. C. C. Sparks.—p. 909.
Vertebral Osteochondroma. H. C. Ilgenfritz.—p. 917.
Continuous Lumbar Sympathetic Block. D. B. Corcoran.—p. 923.
Fibrosarcoma of Ileum: Two Case Reports. H. Mahaffey.—p. 934.
Omphalocele: Analysis of 21 Cases from Charity Hospital of Louisiana at New Orleans. H. R. Kahle.—p. 947.
Serum Cholinesterase Levels in Surgical Patients: Preliminary Report. H. E. Snyder, C. D. Snyder and L. D. Bunch.—p. 959.
Wrinkle-Free Stockinette for Use Under Casts. W. B. Fischer and L. W. Breck.—p. 981.

Exploration of Common Bile Duct.—Welborn believes that combined transduodenal and supraduodenal exploration of the common duct is indicated (1) when choledochotomy is being carried out, stones have been found, and it is doubtful whether the ampullary and pancreatic portions of the duct have been completely cleared of stones; (2) when the surgeon suspects that there is a stricture about the ampulla of Vater; (3) during resection of a duodenal diverticulum when the relationship of the papilla to the diverticulum must be definitely established; (4) during resection for duodenal ulcer, when the surgeon fears that the patency of the papilla may be compromised by inversion of the duodenal stump; and (5) in cases of tumor of the ampulla of Vater, the adjacent area of the duodenum, or the head of the pancreas. Certain maneuvers of the technique are described and illustrated. The postoperative care is briefly described and four case histories are presented. The author feels that this method has not been employed oftener in the past because of fear of peritonitis or of development of a fistula following opening of the duodenum, but these complications can be avoided. When stones are present in the duct and there is doubt as to whether or not those in the pancreatic portion have been removed, the surgeon should mobilize the duodenum and open it in order to establish the complete patency of the duct system. This procedure should be performed with the primary operation because at a second operation the normal anatomical landmarks may be distorted by adhesions and the procedure made difficult and hazardous by vascular, friable adhesions. This operation must not be performed unless the surgeon is able to mobilize the duodenum widely to permit adequate exposure for exploration and subsequent closure.

Angiology, Baltimore

2:311-424 (Oct.) 1951

Communications Between Carotid Artery and Cavernous Sinus: Clinical and Critical Study of Their Complications and Treatment. E. Holman, F. Gerbode and V. Richards.—p. 311.
Studies in Experimental Frostbite: VIII. Treatment with ACTH. R. E. Lempke and H. B. Shumacker Jr.—p. 340.
*Treatment of Cold Feet and Legs After Poliomyelitis. K. Stenport. —p. 345.
Dynamic Phlebography. J. A. Ferreira, E. J. F. Villamil and A. O. Ciruzzi.—p. 350.
Post Mortem Arteriography in "Normal" Lower Limbs. C. F. Ross and K. D. Keele.—p. 374.
Tumorigenic Lymphedema. F. Martorell.—p. 386.
Post Phlebitis Syndrome: Method of Treatment. B. Seligman.—p. 393.
Evaluation of Inositol in Treatment of Arteriosclerosis Obliterans. R. J. Popkin.—p. 398.
Muscle Adenylic Acid: Clinical Study of Its Effect. E. D. Lawrence, D. Doktor and J. Sall.—p. 405.
Hemodynamic Changes in Small Vessels in Man as Analyzed by Digital Plethysmography. R. L. Johnson, E. D. Freis and H. W. Schnaper. —p. 412.

Cold Legs and Feet Following Poliomyelitis.—Coldness of the legs and feet has been troublesome for some patients who have had poliomyelitis. This symptom has not received much attention, because it has been overshadowed by paralysis. At the Institute for Cripples in Helsingborg 224 patients with paralysis of the lower extremities were studied for subjective and objective manifestations of coldness. In 93 the symptom was so slight that no treatment was indicated. Usually the patients least affected by paresis had the least symptoms of coldness, but occasionally a patient with slight paresis had relatively intense feelings of cold and vice versa. In the severest cases the coldness was felt up as far as the groin. The color of the cold skin differed when the patient was recumbent and standing. In the morning, when the feet were warm, a pink tinge was often seen while toward evening the color deepened progressively to bluish violet. On going to bed, the feet were often very cold, even during the warm season. Warming up required a long time and was accompanied by a burning pain. Since this coldness in the legs was similar to that observed in other vasospastic conditions such as Buerger's disease, lumbosciatic disorders, frostbite, or Raynaud's disease, it was decided to treat it by measures directed toward the sympathetic nervous system. First a vasodilating drug was given by mouth in tablet form. In some patients the therapeutic results (cessation of cold feeling and of muscular pain) stopped when medication was interrupted, but in others the effect persisted. In some cases in which the condition had existed for a long time, the vasodilating drug was ineffective. Later the author employed blockage of the second and third lumbar ganglions and finally resection of these ganglions, and the skin temperature increased as much as 7 C.

Annals of Surgery, Philadelphia

134:529-784 (Oct.) 1951. **Partial Index**

Treatment of Oral Cancer by Combination of Radiotherapy and Surgery. H. Wookey, C. Ash, W. K. Welsh and R. A. Mustard.—p. 529.
Regeneration of Human Thyroid After So-Called Total Thyroidectomy. J. V. Goode, A. Grollman and A. F. Reid.—p. 541.
Radioiodine (I^{131}) Tracer Studies After Total Thyroidectomy. D. E. Szilagyi, R. D. McClure, T. H. Connell Jr. and others.—p. 546.
Treatment of Burned Wound Based on Experience of 1000 Hospital Patients. H. S. Allen.—p. 566.
*Approach to Problem of Burn Sepsis with Use of Open-Air Therapy. T. G. Blocker Jr., V. Blocker, S. R. Lewis and C. C. Snyder.—p. 574.
Enzymatic Debridement of Burns. W. A. Altemeier, R. Coith, W. Culbertson and A. Tytell.—p. 581.
Stress Response in Severely Burned: Interim Report. E. I. Evans and W. J. H. Butterfield.—p. 588.
Renal Function Studies of Severely Burned Patients: Preliminary Report. B. W. Haynes Jr., M. E. DeBakey and F. R. Denman.—p. 617.
Etiologic Factors in Postoperative Salt Retention and Its Prevention. J. M. Winfield, C. L. Fox Jr. and W. L. Mersheimer.—p. 626.
Prevention and Treatment of Atelectasis by Control of Bronchial Secretions. J. M. Baker, L. C. Roettig and G. M. Curtis.—p. 641.
Clinical Significance of Respiratory Acidosis During Operations. H. C. Maier, G. W. Rich and S. Eichen.—p. 653.
*Experiences with Streptokinase and Streptodornase. G. C. Adie and W. G. Childress.—p. 659.
Surgical Treatment of Ventricular Fibrillation. J. Johnson and C. K. Kirby.—p. 672.
Surgical Treatment of Transposition of Pulmonary Veins. W. H. Muller Jr.—p. 683.
*Surgery of Mitral Stenosis: III. Finger-Fracture Valvuloplasty. D. E. Harken, L. Dexter, L. B. Ellis and others.—p. 722.
Resection of Descending Thoracic Aorta for Aneurysm: Report of Use of Homograft in Case and Experimental Study. C. R. Lam and H. H. Aram.—p. 743.
Treatment of Certain Aortic Coarctations by Homologous Grafts: Report of 19 Cases. R. E. Gross.—p. 753.
Viability of Long Blood Vessel Grafts. W. S. McCune and B. Blades. —p. 769.

Burn Sepsis with Open-Air Therapy.—From January, 1950, to March, 1951, 104 acute and subacute burn patients were treated by the open-air technique and 103 patients with similar burns were treated with occlusive dressings. The regimen employed in the open-air therapy is as follows: On admission clotting is removed and gross dirt is washed off with detergents and large quantities of warm isotonic sodium chloride solution. The patient is then placed on sterile sheets with the burned areas completely exposed to the air. No heat cradle is employed and no medicament is applied locally. Affected extremities are elevated, using mechanical devices if necessary. With severe burns of the hands pressure dressings are still advocated for the first 48 hours for immobilization in the position of function; then the hands are exposed also. Unburned parts of the body may be covered with bedclothes. Within 48 to 72 hours the raw surfaces are covered by a thin dry crust; when it is completely formed, the patient has no pain on pressure over the area. From the first, general therapy of the patient has priority over local measures. The usual sedatives are given for control of pain and oxygen is administered if indicated. Whole blood is the replacement fluid of choice from the time of injury, and it is usually indicated until the patient has recovered from shock and the hematocrit level drops below 50. Crusts are inspected daily. Mild

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second degree burns are usually healed completely between the 8th and 16th day and the crusts fall off spontaneously. At this time it is possible to distinguish between deep second and third degree burns by the appearance of the overlying crust. With third degree burns the crust is adherent and contracted below the level of the surrounding tissue, whereas in a partial-thickness burn it is raised above the normal skin surface. When the crusts fall off is the optimum time for excision of slough from the underlying fatty subcutaneous tissue and skin grafting in full-thickness burns. Clinical evidence suggests that a dry crust overlying an area of partial or complete skin loss forms a mechanical barrier against pathogenic organisms that require warmth and moisture for growth; it exerts a benign influence until healing has occurred or until a local infectious process undermines the burn crust from the edges, indicating that surgical intervention is needed. Although use of the exposure method did not improve the mortality rate of severely burned patients, a striking change in the length and degree of morbidity was noted, particularly in patients with burns covering more than 30% of the body surface. With open-air therapy patients required considerably less whole blood than with occlusive dressings. In the group of patients treated by open-air exposure the average time of hospitalization was 21 days for minor burns and 42 days for major burns, while in the group of patients treated with occlusive dressings the average lengths of hospitalization were 33 and 87 days, respectively. The exposure treatment is effective, provides relief from pain, is useful for nearly all types of burns, is usable by both first-aid workers and professional personnel, is not expensive, and does not predetermine subsequent treatment. It is particularly applicable to flash-burns involving only one surface of the body, the type of burn that would be expected in typical atomic bomb casualties.

Streptokinase and Streptodornase.—Nineteen patients with various conditions were treated with streptokinase and streptodornase. The enzymes used were derived from the Lancefield Group C, H46A strain of Streptococcus, which is nonpathogenic for man. The substrate was not satisfactory for the enzymatic reaction in five of the patients, who had actinomycosis, large bilateral gluteal fistulas, tuberculous empyema of two years' duration, pleural effusion with incisional sinuses following lobectomy, and tuberculous meningitis, respectively. Six patients who were definitely benefited by treatment had subphrenic abscess, pulmonary abscess, large pararectal abscess, infection of lesser sac of peritoneum following perforation of cardia from esophagoscopy, infected hemopneumothorax after lobectomy, and infected subcapsular space after thoracoplasty, respectively. Of the remaining eight patients in whom the results of treatment were definitely beneficial, two had empyema after lobectomy, and the other six had hemothorax after thoracoplasty, infected hemothorax after thoracoplasty, infected abdominal wound after laparotomy, subcutaneous tuberculous sinus in chest wall incision, infected hemothorax after stab wound, and tuberculous pleural effusion, respectively. Though the number of patients treated is small, the following generalizations may be made: When the enzymes are introduced into closed spaces, in most cases there is a generalized reaction, with elevation of temperature and malaise that lasts for several hours and subsides quickly. The patient must be observed closely during the period of enzyme action; effective means must be employed for placing the enzymes in intimate contact with the substrate and at the same time providing for adequate release of the increased fluid accumulation. The addition of antibiotics to the enzyme solution will aid in reducing the infection in purulent processes and prevent contamination in noninfected collections of blood. In early hemothorax, if proper treatment is instituted, the effect exerted by the enzymes is rapid and final. In most purulent exudates the thick pus is liquefied so that aspiration or drainage is improved.

Blunt Dissection Valvuloplasty for Mitral Stenosis.—The efficacy of several surgical procedures for treatment of mitral stenosis was compared in 86 patients with this disease. Valvulotome valvuloplasty was performed in 9, "finger-fracture" valvuloplasty in 71, reservoir-shunt operation in 2, denervation of the heart in 2, and creation of interauricular septal defect in 2. Both clinical and laboratory results indicated that finger-fracture valvuloplasty is far superior to the other procedures. In this technique the fused mitral leaflets are separated at the commissures by gentle blunt dissection with the gloved finger rather than by incision with the valvulotome. This is the technique of choice in what the author calls Type 1 mitral stenosis, but is not applicable to Type 2 stenosis. In Type 1 stenosis bridges of fusion between the major and minor mitral leaflets form a rigid marginal zone that is continuous with a similar rigid zone around the lips of the stenotic orifice. The chordae tendinae and papillary muscles are essentially normal. In Type 2 stenosis there is uniform fusion of the leaflets, forming an elastic funnel, with extension of the process to the chordae tendinae, which are shortened, thickened, and fused, and may even form a secondary stenotic orifice. Blunt dissection with the finger will fracture the fusion bridges across the commissures in Type 1, but incision with the valvulotome is necessary in Type 2. Type 1 stenosis was present in over 85% of the authors' patients. All of the 71 patients treated by finger-fracture valvuloplasty were partially or completely disabled by their mitral stenosis preoperatively. Among the 37 who were partially disabled because of exertional dyspnea and frequent attacks of hemoptysis, chest pain, and pulmonary edema, only 1 died. Of the remaining 34 who were completely disabled, usually with right ventricular failure, 17 died as a result of the operation.

California Medicine, San Francisco

75:261-320 (Oct.) 1951

Specialist-General Practitioner Cooperation in Obstetrical Department. B. H. Watson.—p. 261.
Treatment of Metastatic Breast Cancer in Bone. M. A. Sisson and L. H. Garland.—p. 265.
Diagnosis of Hemolytic Anemias. E. R. Evans.—p. 271.
Fistulas Following Gastrectomy. R. B. Henley and H. G. Bell.—p. 276.
Use of Free Grafts in Correction of Recurrent Pterygia, Pseudopterygia and Symblepharon. D. C. Hartman.—p. 279.
Apoplexy in Young Adults—Diagnostic and Therapeutic Observations. E. Boldrey.—p. 281.
•Surgical Treatment of Mitral Stenosis. W. H. Muller Jr.—p. 285.
Diphtheria: Present-Day Problem. H. Brainerd and H. B. Bruyn.—p. 290.
Treatment of Closed Head Injuries. L. B. Lawrence.—p. 296.
Dermatitis of Hands in Industry. N. N. Epstein and J. R. Allen.—p. 300.

Surgical Treatment of Mitral Stenosis.—Mitral commissurotomy was performed on 25 patients with mitral stenosis; 14 were over 35 and the oldest was 51. The author used Bailey's technique, which consists of introduction of the right index finger and an especially designed valvulotome through the left auricular appendage into the left auricle and division of the mitral valve commissures, but he employed a different instrument. His valvulatome has a hook on either side so that the median commissure can be divided without pronating the hand. The instrument is curved transversely as well as longitudinally to fit the contour of the transverse curve of the finger, so that a second glove, which was used to attach the Bailey knife to the index finger is not needed. A maintenance dose of digitalis and doses of quinidine sulfate up to about 0.4 gm. every three to four hours were administered before the operation. All the patients had had symptoms of rheumatic heart disease for from 6 months to 20 years, and many had far advanced symptoms of pulmonary hypertension with pulmonary edema and hemoptysis. Five had auricular fibrillation before operation. Six had had peripheral emboli, and two had residual hemiplegia. Four of the patients died, one of a pulmonary embolus three weeks after the surgical intervention, the second of cardiac arrest during the operation after moderate hemorrhage due to a tear in the wall of the auricle, the third from rapidly progressive heart failure on the fourth postoperative day, and the fourth 18 hours after the operation. Of the 21 patients who survived the operation, all appear to be somewhat improved. Congestive failure occurred during the first two weeks in six patients, and in three it was precipitated by a respiratory infection. An increase in the dose of digitalis and the administration of mercurial diuretics relieved the cardiac decompensation in all but one patient. Pulmonary edema and hemoptysis did not recur in the surviving patients. Exertional dyspnea was diminished and exercise tolerance increased in most cases. It is still too early to predict the final outcome, but it appears to be favorable. The results already obtained encourage the continued use of mitral commissurotomy in patients with mitral stenosis who have advanced pulmonary hypertension.

Cancer, New York

4:907-1158 (Sept.) 1951. **Partial Index**

Carcinosarcoma of Lung: Review of Literature and Report of Two Cases Treated by Pneumonectomy. M. Bergmann, L. V. Ackerman and R. L. Kemler.—p. 919.
Unusual Leukocyte Responses in Primary Carcinoma of Lung. R. J. Fahey.—p. 930.
Pathological Effects and Radioautographic Localization of I^{131} in Humans: Postmortem Study in Nine Patients. J. T. Godwin, B. J. Duffy Jr., P. J. Fitzgerald and others.—p. 936.
Hürthle-Cell Cancer of Thyroid: Review of 40 Cases. E. L. Frazell and B. J. Duffy Jr.—p. 952.
*More Thorough Operation for Gastric Cancer: Anatomical Basis and Description of Technique. G. McNeer, D. A. Sunderland, G. McInnes and others.—p. 957.
Comparative Study of Serum Glycoproteins in Patients with Parenchymatous Hepatic Disease or Metastatic Neoplasia. E. M. Greenspan, I. Lehman, M. M. Graff and E. B. Schoenbach.—p. 972.
ACTH and Cortisone in Advanced Carcinoma of Digestive Tract. R. W. Postlethwait, V. Moseley, K. T. McKee and others.—p. 984.
Primary Lymphosarcoma of Appendix. R. G. Clarke and J. P. Simonds. —p. 994.
Radioactive Phosphorus: II. In Treatment of Myeloid Leukemia. H. D. Diamond and L. F. Craver.—p. 999.
Metabolism of Leukocytes Taken from Peripheral Blood of Leukemic Patients. R. M. Bird, J. A. Clements and L. M. Becker.—p. 1009.
Heterologous Transplantation of Human Neoplasms Including Lymphomas. S. B. Andrus, G. F. Meissner and C. M. Whorton.—p. 1015.
Heterophile Antibodies and Antigens in Neoplastic Diseases. C. M. Southam, Y. Goldsmith and J. H. Burchenal.—p. 1036.
Desmomas of Abdominal Wall in Children. R. J. Booher and G. T. Pack.—p. 1052.
Pathology and Treatment of Adenocarcinoma of Cervix. S. B. Gusberg and J. A. Corscaden.—p. 1066.
Evaluation of Bilateral Orchiectomy in Treatment of Carcinoma of Prostate. I. C. Rusche.—p. 1087.
Extraskeletal Osteogenic Sarcoma Arising in Irradiated Tissue. O. Auerbach, M. Friedman, L. Weiss and H. I. Amory.—p. 1095.
Osteogenic Sarcoma Following Prophylactic Roentgen-Ray Therapy: Report of Case. S. Spitz and N. L. Higinbotham.—p. 1107.

Operation for Gastric Cancer.—McNeer and associates investigated the following aspects of surgery for gastric cancer: (1) results when the stomach is resected in continuity with adjacent organs; (2) resectability of recurrent gastric cancers; (3) progress in technique of total gastrectomy; (4) effectiveness of subtotal gastrectomy; and (5) sites of regional lymph node metastases. This paper is mainly a preliminary report on methods used in ascertaining the sites of regional lymph node metastases and the results obtained in 15 surgical interventions. The authors also describe a technique of radical total gastrectomy, partial pancreatectomy, and splenectomy that they recommend as an approximation to the ideal of an en bloc resection of gastric cancer. They feel that the preliminary results of their anatomic study justify the magnitude of the surgical techniques. One of the chief advantages of the described approach is that it permits mobilization and rotation of the pancreas, with clear exposure of the splenic vessels at their origin. It is certain that gastric cancers metastasize early to the pancreaticolienal nodes oftener than was previously suspected. It is equally certain that metastatic nodes cannot be reliably identified by palpation. Therefore the authors believe that the spleen and the left portion of the pancreas should be removed in cancers of the proximal and midgastric segments. It would seem logical also to remove the transverse mesocolon and colon for cancers of the greater curvature in which the mesocolon is involved. The authors have no information concerning the extent of lymph node metastases about the head of the pancreas when operable cancers are situated in the distal gastric segment, but they do not believe that resection of the head of the pancreas combined with gastrectomy would be justifiable. Later developments may modify their views.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

4:1-214 (Oct.) 1951

Diagnosis and Treatment of Vaginitis. S. Abel.—p. 34.
*Treatment of Clubfoot. G. M. Hart.—p. 41.
Managing the Comatose Patient. R. Meyers and M. E. Meyers.—p. 45.
Acute Abdominal Emergencies. M. A. Casberg.—p. 53.
How to Treat Parkinsonism. A. S. Effron.—p. 61.
Management of Parenteral Fluid Therapy. S. Freeman.—p. 64.

Treatment of Clubfoot.—Hart shows that clubfoot may be treated by the general practitioner with wedging casts followed by application of a Denis Browne splint. The deformity should be evaluated a few days after birth and evidence of congenital dislocation of the hip should be searched for, because this condition is occasionally associated with clubfoot. It should be suggested to the mother that the first cast be applied when the child is between 1 and 2 months old. Treatment is then carried out in the office at weekly intervals with wedging casts until the deformity is fully corrected, usually by the time the child is about 7 or 8 months old. A Denis Browne splint is then fastened to a pair of firm-soled baby shoes that are worn on the opposite feet. The splint is worn until the child is about 1 year old and is ready to stand and walk. It is then necessary that clubfoot shoes be worn during the daytime and the splint at night. When the splint is no longer used, the mother is taught stretching exercises to carry the forefoot into abduction and the hindfoot into dorsiflexion. These are carried out several times a day for 10 to 15 minutes at a time and should be continued until the child is several years of age or until the foot remains in satisfactory position. If at any time the deformity recurrs, the foot should be placed again in a cast, and further wedging carried out, followed by a period of retention. The deformity is completely corrected in 90% of patients with clubfoot treated by conservative measures. Approximately 10% subsequently require some type of surgical operation.

Iowa State Medical Society Journal, Des Moines

41:413-446 (Oct.) 1951

Diagnosis and Management of Chronic Peripheral Arterial Insufficiency. H. N. Neu and W. J. Reedy.—p. 413.
Use and Misuse of Hepatic Function Tests. M. Franklin.—p. 416.
Some Observations of Management of Patients with Stroke. J. T. Bakody. —p. 419.
*Malaria in Korean Veterans. J. E. Kelsey and D. E. Derauf.—p. 423.

Malaria in Korean Veterans.—This paper reviews observations on 19 patients with malaria in whom the disease was diagnosed and treated at the Veterans Administration Hospital in Des Moines, Iowa. All the men had contracted malaria in Korea. Ten of the 19 patients were admitted to the hospital without having first consulted private physicians. A diagnosis of malaria was made in three of the nine patients who first consulted private physicians. Of the six undiagnosed cases, three received penicillin, one penicillin and sulfonamide drugs, and one had two "manipulations." The average period of time from the date of departure from the malaria zone to the onset of symptoms was 31 days, with a range of from 14 days to 7½ months. All patients had a positive blood smear for Plasmodium vivax and one case had a coexisting Plasmodium malaria infection. The majority of the patients had evidence of malarial hepatitis. A large percentage had coexisting helminthic infestation. Each patient was given an initial dose of 1.0 gm. chloroquine phosphate, followed by 0.5 gm. daily for four days. There were no symptoms of toxicity to the drug. All cases were treated with bed rest until the chloroquine was given. Patients with hepatitis were placed on a high-protein, high-caloric diet with supplementary vitamins and kept at bed rest until liver function tests showed improvement. Helminthic infestations were treated when diagnosed. As the result of the Korean conflict, malaria is again being seen in nonendemic regions in America. Physicians should be familiar with the disease and the most modern therapeutic measures.

Journal of Bacteriology, Baltimore

62:355-518 (Oct.) 1951. **Partial Index**

Bacterial Oxidation of Tryptophan: I. General Survey of Pathways. R. Y. Stanier, O. Hayaishi and M. Tsuchida.—p. 355.
Studies of Rabies Street Virus in Syrian Hamster. R. L. Reagan, H. O. Lineweaver, D. M. Schenck and A. L. Brueckner.—p. 391.
Studies of Action of Streptococci on Blood with Their Application to Metabolism and Variation of Streptococci. W. R. Stinebring and H. E. Morton.—p. 395.
Production of Hyaluronidase by Lancefield's Group B Streptococci. T. A. Gochnauer and J. B. Wilson.—p. 405.
Rapid Plate Method of Counting Spores of Clostridium Botulinum. A. A. Andersen.—p. 425.
Effects of Design upon Error of Microbiological Assay for Vitamin B_{12}. K. A. Brownlee and D. N. Lapedes.—p. 433.
Evidence Suggesting that Granules of Mycobacteria Are Mitochondria. S. Mudd, L. C. Winterscheid, E. D. DeLamater and H. J. Henderson. —p. 459.
Photobiological Studies on Escherichia Coli at Low Temperatures. F. Heinmets and W. W. Taylor Jr.—p. 477.

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Journal of Clinical Investigation, Cincinnati

30:897-1032 (Sept.) 1951. **Partial Index**

Effect of Intravenous Administration of Dextran on Cardiac Output and Other Circulatory Dynamics. A. C. Witham, J. W. Fleming and W. L. Bloom.—p. 897.
Comparative Prothrombic Activity of Human and Dog Blood. A. J. Quick and C. V. Hussey.—p. 903.
Effect of Chronic Administration of Adrenal Medullary Hormones to Man on Adrenocortical Function and Renal Excretion of Electrolytes. L. E. Duncan Jr., D. H. Solomon, M. P. Nichols and E. Rosenberg. —p. 908.
Effect of High Spinal Anesthesia on Renal Hemodynamics and Excretion of Electrolytes During Osmotic Diuresis in Hydropenic Normal Pregnant Woman. N. S. Assali, S. A. Kaplan, S. J. Fomon and others. —p. 916.
Evaluation of Neurogenic Control of Blood Pressure in Hypertension with Tetraethylammonium Chloride and Spinal Anesthesia. A. A. Brust, M. F. Reiser and E. B. Ferris Jr.—p. 925.
Studies of Coronary Disease in Experimental Animal: II. Polarographic Determinations of Local Oxygen Availability in Dog's Left Ventricle During Coronary Occlusion and Pure Oxygen Breathing. J. J. Sayen, W. F. Sheldon, O. Horwitz and others.—p. 932.
Primary and Secondary Leucocyte Changes Following Intramuscular Injection of Epinephrine Hydrochloride. A. J. Samuels.—p. 941.
Effect of Intravenous Infusion of Thromboplastin on "Heparin Tolerance." R. C. Hartmann, C. L. Conley and J. R. Krevans.—p. 948.
Anoxia and Human Pulmonary Vascular Resistance. R. N. Westcott, N. O. Fowler, R. C. Scott and others.—p. 957.
Motion of Thorax During Heart Cycle: Comparison of Longitudinal, Lateral and Dorsoventral Ballistocardiograms. J. L. Brandt, A. Caccese, W. Dock and A. Schrager.—p. 971.
Introduction to Experimental and Clinical Studies of Carboxylic Cation Exchange Resins. T. S. Danowski, L. Greenman, J. H. Peters and F. M. Mateer.—p. 979.
Acidifying and Non-Acidifying Carboxylic Resin Mixtures Used Alone and with ACTH or Cortisone. J. H. Peters, T. S. Danowski, L. Greenman and others.—p. 1009.
Sodium Restriction and Cation Exchange Resin Therapy in Nephrotic Children. F. M. Mateer, L. H. Erhard, M. Price and others.—p. 1018.

30:1041-1156 (Oct.) 1951

Effect of Hemoglobin on Renal Function in the Human. J. H. Miller and R. K. McDonald.—p. 1033.
Human Glomerular Permeability and Tubular Recovery Values for Hemoglobin. R. K. McDonald, J. H. Miller and E. B. Roach.—p. 1041.
Effect of Khellin on Cardio-Pulmonary Function in Chronic Pulmonary Disease. E. N. Silber, G. L. Snider, H. Goldberg and others.—p. 1046.
Effects of Exogenous and Endogenous Posterior Pituitary Antidiuretic Hormone on Water and Electrolyte Excretion. R. J. F. Murphy and E. A. Stead Jr.—p. 1055.
Artificial Kidney Function: Kinetics of Hemodialysis. A. V. Wolf, D. G. Remp, J. E. Kiley and G. D. Currie.—p. 1062.
Study of Serum Proteins and Lipids with Aid of Quantity Ultracentrifuge: I. Procedure and Principal Features of Centrifugate of Untreated Normal Serum as Determined by Quantitative Analysis of Samples from 10 Levels. R. H. Turner, J. R. Snavely, W. H. Goldwater and others. —p. 1071.
Evidence Suggesting Renal Tubular Excretion of Potassium in Man During Recovery from Acute Renal Insufficiency. J. H. Sirota and I. G. Kroop.—p. 1082.
*Electrolyte Equilibrium During Mercurial Diuresis. W. B. Schwartz and W. M. Wallace.—p. 1089.
Potentiation of Diuretic Action of Mercuhydrin by Ammonium Chloride. J. G. Hilton.—p. 1105.
Effects of Injection of Hypertonic Glucose on Metabolism of Water and Electrolytes in Patients with Edema. R. Tarail, D. W. Seldin and A. V. N. Goodyer.—p. 1111.
Familial Differences in Proportion of Abnormal Hemoglobin Present in Sickle Cell Trait. J. V. Neel, I. C. Wells and H. A. Itano.—p. 1120.
Multiple Myeloma: IV. Abnormal Serum Components and Bence Jones Protein. R. W. Rundles, G. R. Cooper and R. W. Willett.—p. 1125.
Evaluation of Renal Resistances, with Special Reference to Changes in Essential Hypertension. D. M. Gomez.—p. 1143.

Electrolyte Equilibrium During Mercurial Diuresis.—Earlier investigators had shown that the amount of fixed cation in the urine voided during mercurial diuresis corresponded to the amount in an equivalent quantity of body fluid. The quantity of chloride was greater than that which would be expected in the fluid lost, resulting in hypochloremic alkalosis. Administration of acidifying salts prevented alkalosis and at the same time increased diuresis. This paper describes studies on the balance of weight, nitrogen, and electrolytes, the electrolyte changes in the serum, and the cation-anion pattern of the urine in 10 patients with congestive heart failure who were treated with mercurial diuretics. A minority of the patients lost water and electrolytes in a manner indicating that the only significant change in the body fluids was loss of extracellular fluid of normal composition. This small group never developed mercurial unresponsiveness. The majority of patients excreted electrolytes and water in proportions that led to chloride depletion and alkalosis without change in the concentration of sodium in the serum. This type of response was often associated with loss of intracellular fluid and potassium and reduction of serum potassium concentration. Unresponsiveness to the diuretic developed in all but one of this group. Correction of the chloride deficit with ammonium chloride or hydrochloric acid restored mercurial responsiveness. The serum concentrations of chloride and bicarbonate associated with unresponsiveness varied from patient to patient. In those in whom chloride excretion exceeded sodium excretion the surplus of chloride was secreted in combination with potassium and ammonium. The usual renal response to mercurial diuretics may result from interference with tubular reabsorption of chloride, and the loss of fixed cation is probably secondary to the effect on anion excretion.

Journal of International College of Surgeons, Chicago

16:407-542 (Oct.) 1951

Medullary K-Nailing of Humerus to Spine of Scapula for Arthrodesis of Shoulder. G. Pipkin.—p. 407.
Phleboliths. A. de la Pena and J. Reig.—p. 419.
Operative Position for Intrathroacic Procedures. R. H. Betts.—p. 424.
Prefrontal Lobotomy for Phantom Limb and Phantom Pain. A. J. Beller and E. Peyser.—p. 432.
Surgical Repair of Subcutaneous Tissue Defects. M. I. Berson.—p. 436.
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Genital Fistulas: Review of 69 Cases. H. M. Lazarus.—p. 460.
Accurate Surgical Approach to Appendix. E. I. Greene and J. M. Greene.—p. 470.
Prolapsed Antral Mucosa: Report of Case. V. J. Hittner.—p. 475.
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Retropubic Prostatectomy. G. M. Phadke.—p. 481.
Total Versus Subtotal Abdominal Hysterectomy. P. S. Doege.—p. 486.

Journal Lab. and Clinical Medicine, St. Louis

38:497-662 (Oct.) 1951. **Partial Index**

*In Vivo Observations of Effects of Cortisone on Vascular Reaction to Large Doses of Horse Serum Using Rabbit Ear Chamber Technique. R. H. Ebert and R. W. Wissler.—p. 497.
In Vivo Observations of Vascular Reactions to Large Doses of Horse Serum Using Rabbit Ear Chamber Technique. R. H. Ebert and R. W. Wissler.—p. 511.
*Stress Studies on Auto Race Drivers. J. W. Frost, R. L. Dryer and K. G. Kohlstaedt.—p. 523.
Electrophoretic Studies on Serum of Rheumatoid Arthritis Patients Treated with Cortisone. E. L. Hess, A. Cobure and E. F. Rosenberg. —p. 526.
Effects of ACTH and Cortisone on Renal Tubular Transport of Uric Acid, Phosphorus, and Electrolytes in Patients with Normal Renal and Adrenal Function. S. H. Ingbar, E. H. Kass, C. H. Burnett and others. —p. 533.
Comparative Effects of Heparin and Paritol-C upon Blood Coagulation and Prothrombin Time and upon Plasma Antithrombin Level. G. W. Howe, C. A. Armbrust Jr. and E. M. McPeak.—p. 542.
Experiences with Heparin: Comparative Effects of Intravenous and Subcutaneous Administration in the Same Individuals. E. W. Hauch and N. W. Barker.—p. 550.
Riboflavin Excretion as Function of Protein Metabolism in the Normal, Catabolic, and Diabetic Human Being. H. Pollack and J. J. Bookman. —p. 561.
Sodium and Potassium Concentration in Human Cerebrospinal Fluid: I. Normal Values. C. W. Shaw and H. L. Holley.—p. 574.
Diffusion of Dextrans of Different Molecular Sizes to Lymph and Urine. G. Grotte, R. C. Knutson and J. L. Bollman.—p. 577.
Effect of Enterohepatic Circulation on Bromsulfalein Test of Hepatic Function. C. A. Owen Jr.—p. 583.
Venous Catheterization for Continuous Parenteral Fluid Therapy: Use of Heparin in Delaying Thrombophlebitis. L. H. Anderson, S. L. Aldrich, B. Halpern and R. E. Dolkart.—p. 585.
Estimation of Cardiac Output and Evans Blue Space in Man, Using an Oximeter. J. W. Nicholson III and E. H. Wood.—p. 588.
Human Serum Tributyrinase: III. Levels in Cancer. R. Hoare and J. Tuba. —p. 613.
Treatment of Chronic Typhoid Carriers with Terramycin. R. F. Korns and R. M. Albrecht.—p. 617.
Comparison of in Vitro Sensitivity of Freshly Isolated Pathogenic Bacteria to Terramycin and Other Antibiotics (Aureomycin, Chloramphenicol, Penicillin, and Streptomycin). J. C. Ransmeier, H. E. Brown and N. Davis.—p. 620.

Effects of Cortisone on Vascular Reaction to Horse Serum.—Ebert and Wissler investigated the effect of cortisone on in vivo manifestations of serum disease by rabbit-ear-chamber technique. They found that treatment with cortisone effects a profound reduction in the degree of vascular damage caused by

serum disease. Vascular tone is better maintained, vascular endothelium tends to keep its normal refractile appearance, swelling of endothelium is suppressed, and the sticking of leukocytes to endothelium is reduced. Sludging of erythrocytes is less marked, and platelet and white blood cell thrombi and emboli are less numerous in treated animals, but suppression of these intravascular changes is less dramatic than the reduction of vascular damage. As a result of increased integrity of vascular endothelium diapedesis of leukocytes is decreased and accumulation of exudate is reduced. The systemic reaction following the second injection of horse serum in treated animals is lessened. The effects of cortisone are reversible, and after treatment is stopped an exacerbation of the vascular changes is observed. It is felt that cortisone has a profound effect on the integrity and reactivity of small vessels and that the suppression of the in vivo manifestations of serum disease is due to this nonspecific effect rather than to suppression of antibody formation or antibody-antigen union.

Stress Studies on Auto Race Drivers.—Experimental animals under stress show evidence of increased adrenocortical activity. Frost and associates decided to evaluate the effect of combined physical and mental stress on normal young healthy males. The "stress" in this study was the annual 500-mile Indianapolis Speedway Race. This is a competitive and dangerous contest in which the drivers race their cars around a 2.5-mile oval track at average speeds of between 120 and 125 miles per hour. There was evidence of increased pituitary adrenal stimulation during the stress period in that seven of nine subjects showed at least a 90% decrease, and two subjects a 62 and 65% decrease in the total number of circulating eosinophils after the race. Six of seven subjects tested showed increased excretion of 17-ketosteroids of at least 50% following the stress as compared to the control period. There was no consistent response in the sodium, potassium, uric acid, or creatinine levels in studies on urine and serum.

Journal of Thoracic Surgery, St. Louis

22:329-438 (Oct.) 1951

*Results in 278 Patients Who had Modern Type of Thoracoplasty for Tuberculosis: Follow-Up of Living Patients 5 to 15 Years After Operation. W. M. Lees, S. C. H. Yang, M. Papoulakos and others.—p. 329.

Simultaneous Decortication and Resection in Unsuccessful Pneumothorax. A. O. Riley, M. Morris and V. H. Kaunitz.—p. 341.

Decortication Preceding Thoracoplasty for Elimination of Long-Standing Tuberculous Empyema. F. D. Ackman and P. Madoré.—p. 358.

Subscapular Paraffin Pack as Supplement to Thoracoplasty in Treatment of Pulmonary Tuberculosis. W. E. Adams, W. M. Lees and J. M. Fritz.—p. 375.

Endoscopic Sponge Biopsy. M. G. Carter, R. R. Nesbit and C. A. Piper.—p. 386.

Pathogenesis of Bronchopleural Fistulas Following Excisional Therapy for Pulmonary Tuberculosis. G. N. Stemmermann, C. F. Daniels and O. Auerbach.—p. 392.

Bronchiectasis: Comparative Study of Tuberculous and Nontuberculous Pyogenic Suppurative Disease. J. Gordon, R. Brook and P. C. Pratt.—p. 411.

Function Tests in Pulmonary Surgery. G. Birath and C. Crafoord.—p. 414.

Nocardiosis: Report of Single Case with Recovery. R. G. Connar, T. B. Ferguson, W. C. Sealy and N. F. Conant.—p. 424.

Pulmonary Resection for Histoplasmosis: Case Report. O. L. Bettag.—p. 434.

Long-Term Results of Modern Thoracoplasty.—The modern type of thoracoplasty with removal of segments of from 3 to more than 10 ribs was performed on 278 patients with pulmonary tuberculosis. The follow-up period was from 5 to 15 years. Little difference in results was noted with regard to sex or side of the operation. No streptomycin or penicillin was administered either before or after the operation. The major indication for thoracoplasty was cavitary disease. Of the 278 patients, 75 (27%) died from 24 hours to 13½ years after the thoracoplasty. If three months after the operation is considered the maximum period during which death may be attributed directly to the thoracoplasty, 10 patients died as a result of the operation, a mortality rate of 3.6%. Of the 65 patients who died more than three months after operation, 26 died of nontuberculous causes, 33 died of tuberculous causes, and 6 died of unknown causes. Of 76 patients who had tuberculous bronchitis, 53 are alive and 46 of these have negative sputum; 23 patients are dead and 5 of them lived more than 5 years after the operation. Spread or reactivation of the disease occurred in 34 patients, of whom about two-thirds survived and one-third died. Of the 278 patients, 203 are living; 174 (85.7%) of these have negative sputum. By adding to these 174 negative patients 8 patients who died from causes unrelated to tuberculosis and whose follow-up cultures had been negative, 182 patients (65.4% of the total of 278 patients and 89.6% of the 203 living patients) have or had negative cultures. According to the National Tuberculosis Association's classification in 1949 when the authors' study was completed, the 278 patients may be listed as follows: apparently cured, 140 (50.3%); arrested, 9 (3.3%); apparently arrested, 36 (12.9%); quiescent, 2 (0.7%); improved, 11 (3.8%); worse, 5 (2%); and dead 75 (27%).

J. Venereal Disease Information, Washington, D. C.

32:263-304 (Oct.) 1951

Rational Approach to Yaws Control. F. W. Reynolds, T. Guthe and G. Samame.—p. 263.

Development of Treponemal Immobilizing Antibodies in Mice Following Injection of Killed Treponema Pallidum (Nichols Strain). C. P. McLeod and H. J. Magnuson.—p. 274.

Study of Immunity in Experimental Syphilis as Demonstrated by Contact Exposure Challenge. C. P. McLeod and R. C. Arnold.—p. 279.

Cerebrospinal Fluid—Comparative Study of Specimens Taken from Cisterna Magna and Lumbar Subarachnoid Space. M. R. Davis, G. R. Cannefax and E. B. Johnwick.—p. 284.

Comparison of Cisternal and Lumbar Punctures.—Simultaneous cisternal and lumbar punctures were performed on 102 unselected adults admitted to a medical center in order that certain components of cerebrospinal fluid taken from these sites might be compared. Comparison of cell counts revealed little difference in the fluid from the two sites except in cases of marked pleocytosis, in which the lumbar fluid may contain appreciably more cells than the cisternal fluid. There is slightly more reagin (Kolmer's complement-fixation test) in the lumbar than in the cisternal fluid. Total protein values of fluids from these two sites varied from case to case. However, in specimens in which there is no appreciable elevation of values the cisternal to lumbar total protein ratio is usually about 2:3. Lumbar specimens produce more consistent reactivity than cisternal fluids when the colloidal mastic test is applied. This finding is consistent with the fact that total protein values are higher in lumbar than cisternal fluids.

New England Journal of Medicine, Boston

245:475-512 (Sept. 27) 1951

Safeguards in Gastric Resection for Duodenal Ulcer. F. P. Ross and R. Warren.—p. 475.

ACTH Therapy in Ulcerative Colitis and Regional Enteritis. S. J. Gray, R. W. Reifenstein and J. A. Benson Jr.—p. 481.

Suicidal Risk: Its Diagnosis and Evaluation. J. F. Oliven.—p. 488.

Aureomycin in Treatment of Infectious Mononucleosis. J. B. Burnett and J. Milne.—p. 495.

BCG Vaccination. R. C. Partenheimer.—p. 496.

245:513-548 (Oct. 4) 1951

Diabetic Nephropathy: Clinical Syndrome. J. L. Wilson, H. F. Root and A. Marble.—p. 513.

Amelioration of Diabetes and Striking Rarity of Acidosis in Patients with Kimmelstiel-Wilson Lesions. C. G. Zubrod, S. L. Eversole and G. W. Dana.—p. 518.

Use of Tantalum Mesh in Chest-Wall Defects. J. M. Beardsley and C. R. Cavanagh Jr.—p. 525.

Development of Neurologic Manifestations of Pernicious Anemia During Multivitamin Therapy. C. L. Conley and J. R. Krevans.—p. 529.

Antihistamines: Their Use and Abuse. W. S. Burrage.—p. 532.

Diabetic Nephropathy.—The term "diabetic nephropathy" is suggested for a renal disease which is seen only among patients with diabetes. Although it occurs at all ages, it is seen most frequently in young patients. The clinical manifestations of diabetic nephropathy include albuminuria, increased capillary fragility, retinal hemorrhages, peripheral edema, and hypertension and azotemia. All manifestations progress to death, which usually results from uremia but at times results from myocardial infarction, congestive heart failure, or cerebrovascular accident.

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Histopathological findings include all or most of the following lesions: acute and chronic pyelonephritis, arteriosclerosis, arteriolosclerosis, and intercapillary glomerulosclerosis. Manifestations of diabetic nephropathy were shown by 62 patients (25%) of 247 young patients with severe diabetes of 10 to 34 years' duration with onset at ages between 18 months and 30 years. Among the total of 247 patients 37 had adequately controlled their diabetes by early and continued use of insulin, careful measurement of a planned diet, regular medical examination, and daily urine tests with adjustment of diet and insulin to secure sugar-free specimens. Not one of these had nephropathy. The authors feel that a keener awareness of this syndrome would result in wider recognition of the importance of control of diabetes.

Amelioration of Diabetes with Kimmelstiel-Wilson Lesions.—A remarkable reduction in insulin requirement in a diabetic who died in uremia and the clinical axiom that progression of renal disease may relieve diabetes induced Zubrod and associates to study the improvement in diabetes mellitus with renal disease and compare the course of diabetes mellitus in patients with and without renal lesions. The 190 diabetic patients who came to autopsy at the Johns Hopkins Hospital were divided into three groups: those with Kimmelstiel-Wilson lesions, those with other types of renal lesions, and those with no renal lesions. The sole criterion of the Kimmelstiel-Wilson lesion is the "lumpy loop" or hyaline mass in the glomerulus. The term "intercapillary glomerulosclerosis" has been avoided, partly because of possible confusion with intercapillary glomerulonephritis, and partly because of doubt concerning the intercapillary location of the hyaline mass. Varying degrees of arteriolosclerosis and arteriosclerosis of the kidney are almost always associated with the Kimmelstiel-Wilson lesion. If these processes are pronounced, identification of the hyaline masses may be difficult. Although the initial insulin requirements of patients with Kimmelstiel-Wilson lesions were as high as those of the two control groups, as time passed the diabetics with Kimmelstiel-Wilson lesions required progressively less insulin and the diabetics without these lesions required progressively more. In some cases the improvement was so great that patients with previously severe diabetes became hypoglycemic on small doses of insulin. The authors also stress the virtual absence of acidosis throughout the course of diabetes in patients with Kimmelstiel-Wilson lesions. This rarity of diabetic acidosis is so striking that it provides a clue during life to the presence of Kimmelstiel-Wilson lesions and suggests a metabolic variation from ordinary diabetes.

Northwest Medicine, Seattle

50:741-824 (Oct.) 1951

I Remember When. G. O. A. Kellogg.—p. 763.
Plication Operation in Treatment of Small Bowel Obstruction. R. S. Smith.—p. 765.
Emergency Surgery and Emergency Treatment of Eye Burns. A. C. Jones.—p. 769.
Local Anesthesia in Gynecologic Surgery. H. E. Dedman.—p. 770.
Arterio-Venous Aneurysm of Foot Following Plantar Fasciotomy. J. J. Coughlin.—p. 772.
Hiatus Hernia and Gastrointestinal Diverticulosis. A. M. Popma and A. M. Stone.—p. 773.
Discussions of Papers Presented at Boise Meeting of Southern Idaho Chapter of American College of Surgeons. C. S. Stone Jr.—p. 774.

Oklahoma State Medical Assn. J., Oklahoma City

44:341-380 (Sept.) 1951

Malaria in Oklahoma. G. F. Mathews.—p. 343.
The Small Child: Its Diagnosis and Treatment. H. J. Rubin.—p. 345.
Use of Detergents as Cleansing Agent for Vaginal Tract. C. E White.—p. 348.
Report on Maternal Mortality—1950. C. E. Green.—p. 349.

44:381-418 (Oct.) 1951

Biopsy. H. C. Hopps.—p. 384.
Hyperparathyroidism—Osteitis Fibrosa Cystica Parathyroid Adenoma—with Report of Case. J. C. Brogden and L. Lowbeer.—p. 386.
Hemoptysis—70 Cases. P. B. Cameron.—p. 392.
Arterial Insufficiency with Emphasis on Treatment of Acute Arterial Occlusion. J. C. O'Leary, R. D. Haines and W. T. Jay.—p. 394.

Pennsylvania Medical Journal, Harrisburg

54:921-1016 (Oct.) 1951

Anatomy of Pneumonias—Alveolar Exudation. W. D. Gardner.—p. 937.
Maternal Mortality in General Hospital for 20-Year Period. J. B. Nutt.—p. 942.
*Treatment and Management of Asymptomatic Phase of Neurosyphilis. W. T. Ford and J. H. Stokes.—p. 945.
Recognition and Management of Depressed Mental State (Commonly Seen Early by General Practitioners). W. Drayton Jr.—p. 949.
Remissions in Case of Idiopathic Thrombopenia from Induction of Hypercalcemia. F. V. Piccione and J. T. Delehanty.—p. 954.
Histoplasmosis in Lancaster County, Pennsylvania: Report of Two Oral Indigenous Cases with One Recovery and One Autopsy. P. O. Snoke.—p. 957.
Synopsis of Basic Factors of Cerebral Palsy. C. C. Pool and J. G. Furey.—p. 960.
Metabolyte Antagonists in Treatment of Malignancy. R. Jones Jr.—p. 966.
Typhoid Fever in Children. A. R. Schwartz.—p. 970.

Asymptomatic Neurosyphilis.—Of 160 patients with asymptomatic neurosyphilis treated with penicillin during the past six years, only 6 (3.7%) showed signs of clinical progression of the disease. Asymptomatic neurosyphilis is the phase of syphilis in which the only evidence of the disease in the nervous system consists of abnormalities of the spinal fluid. Involvement of the nervous system usually occurs during the first two years of the disease or not at all. Early detection of asymptomatic neurosyphilis requires examination of the spinal fluid in every case of early syphilis 12 to 24 months after completion of treatment. The following four tests should be made on every specimen of spinal fluid: (1) cell count, (2) total protein, (3) spinal fluid test for syphilis (Wassermann-titer), and (4) colloidal gold or mastic. Penicillin is the treatment of choice in asymptomatic neurosyphilis. The total dose of penicillin should be approximately 10,000,000 units given over a period of not less than 10 days. Febrile Herxheimer reactions may be expected in about 24% of all cases; patients with active spinal fluids are more likely to have Herxheimer reactions than those with inactive fluids. Reducing the initial dose of penicillin will not reduce the incidence or intensity of the Herxheimer reaction. The spinal fluid cell count in a bloodless specimen is the most sensitive and reliable indicator of activity of the syphilitic process. An elevated cell count six months after treatment indicates failure to arrest the disease, and the patient should be re-treated. A persistent positive spinal fluid Wassermann and colloidal reaction in an otherwise normal fluid is not an indication for re-treatment. It appears that penicillin will prevent symptomatic neurosyphilis if asymptomatic patients are treated early.

Postgraduate Medicine, Minneapolis

10:269-358 (Oct.) 1951

Therapeutic Indications for Vitamins in Mixtures. T. D. Spies, R. E. Stone, G. Garcia-Lopez and others.—p. 269.
Testosterone Propionate in Carcinoma of Breast. E. A. Banner.—p. 285.
Developmental Diagnosis of Infant Behavior. A. Gesell.—p. 289.
Lesions of Adrenal Glands and Pancreas. W. Walters.—p. 295.
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Local Treatment of Dog Bites. R. T. Vinnard.—p. 322.
Congenital Hernias in Infancy and Childhood. P. A. Caulfield.—p. 327.
Ketogenic Diet in Treatment of Epilepsy in Children. S. Livingston.—p. 333.

Psychiatric Quarterly, Utica, N. Y.

25:1-156 (Part 1 [Supplement]) 1951. **Partial Index**

Case of Reactive Depression Suffering from Ulcerative Colitis: Serial Psychological Investigation. M. M. Tunis and H. Dörken Jr.—p. 22.
Survey of Neuropsychiatric Admissions and Departures at Veterans Administration Hospital, Northport, N. Y., from July 1, 1947 to June 30, 1948. L. Drubin and L. F. Verdel.—p. 40.
Report on Application of Group Psychotherapy at Utica State Hospital. E. Gosline.—p. 65.
Comments on Relationship of Responsivity of Adrenal Cortex and Schizophrenia. J. H. Friedlander.—p. 76.
Stress Factors Involved in Maladjustment of Soldiers. E. Davidoff.—p. 108.

Rhode Island Medical Journal, Providence

34:513-568 (Oct.) 1951

Management of the Infertile Couple, Symposium. W. A. Reid, C. Potter, S. I. Raphael, N. Chaset and E. K. Landsteiner.—p. 529.
Hormonal Therapy for Diseases of Genito-Urinary Tract. C. L. Deming.—p. 537.

Southern Medical Journal, Birmingham, Ala.

44:881-992 (Oct.) 1951

Physical Treatment in Internal Medicine. S. Mead.—p. 881.
Combined Drug Therapy for Parkinson's Disease. J. C. Edwards, E. E. Mueller, M. Ohmoto and others.—p. 886.
Use of Cystogram and Urethrogram in Diagnosis and Management of Rupture of Urethra and Bladder. J. P. Robertson and J. W. Headstream.—p. 895.
Splenectomy as Method of Treatment in Case of Felty's Syndrome. W. H. Wilson and A. T. Hamilton.—p. 902.
Use of Procaine Amide in Ventricular Tachycardia. R. M. Anderson, J. A. Boone and R. R. Coleman.—p. 905.
Contrast Between Anoxia of Experimental Pulmonary Arterial Occlusion and of Tracheal Obstruction with Special Reference to Changes in S-T Segment and T-Wave. J. T. Cuttino.—p. 909.
Congenital Malformations of Heart Amenable to Surgery: With Special Emphasis on Isolated Valvular Pulmonary Stenosis with Closed or Patent Foramen Ovale. J. F. Dammann Jr.—p. 915.
*Esophageal Hiatus Hernia Simulating Coronary Artery Disease. E. K. Doak.—p. 918.
Differential Diagnosis of Coma. R. L. Pullen.—p. 921.
Chronic Rheumatoid Arthritis. E. M. Smith.—p. 925.
Heart in Hemochromatosis. H. W. Keschner.—p. 927.
Cyclodialysis: Simplified Technic. J. H. Allen.—p. 931.
Neurosurgical Aspects of Spontaneous Subarachnoid Hemorrhage. J. G. Lyerly.—p. 936.
Primary Breech Presentation and External Cephalic Version: Management of 308 Primary Breech Presentations. I. A. Siegel and H. B. McNally.—p. 942.
General Practitioner and Fractures of Lower Extremities. J. A. Key.—p. 950.

Esophageal Hiatus Hernia Simulating Coronary Disease.—Herniation of the stomach through the esophageal hiatus of the diaphragm is not uncommon, and is noted with increasing frequency as the average age of patients examined progresses beyond 40 years. Such hiatus hernias may be asymptomatic; they may cause gastrointestinal symptoms; and they may cause pain behind the sternum, in the precordium, in the upper back, neck, shoulders or arms, in the same distribution and with the same intensity as the pains of angina pectoris or myocardial infarction. Persons with severe attacks of pain from hiatus hernia seem to have the same paralyzing fear that distinguishes angina pectoris and myocardial infarction, but the blood pressure is not lowered and the signs of shock do not persist beyond the duration of pain. Attacks of severe pain due to esophageal hiatus hernia are not ordinarily accompanied by fever, leukocytosis, or an increased erythrocyte sedimentation rate. The electrocardiogram may indicate cardiac hypertrophy, ventricular preponderance, and other more or less specific indications of cardiac deterioration, but serial electrocardiograms will not show the progressive changes characteristic of focal myocardial necrosis. In cases of hiatus hernia suggestive of angina pectoris, the two-step exercise test of Master and the anoxemia test of Levy will not bring on the pain or reveal the electrocardiographic changes diagnostic of significant coronary disease. The author feels that all patients with symptoms of angina pectoris should be examined for hiatus herniation and should a hernia be found, the coronary circulation should be evaluated by the Master test or the Levy test. Even in the presence of proved angina pectoris, proper management of a hiatus hernia may relieve the distressing symptoms.

Texas State Journal of Medicine, Fort Worth

47:673-734 (Oct.) 1951

Diagnosis of Intracranial Tumors. W. W. McKinney.—p. 679.
Vascular Lesions of Intracranial Cavity: Surgical Treatment. A. D'Errico.—p. 681.
Management of Spontaneous Subarachnoid Hemorrhage Due to Intracranial Aneurysms. I. J. Jackson and Y. C. Smith Jr.—p. 685.
*Roentgenographic Abnormalities in Disease of Cervical Intervertebral Disks: Report on 23 Patients with Compression of Cervical Root. G. Elkin.—p. 689.
Derangement of Intervertebral Disk: Possible Pain Mechanisms. H. B. Macey.—p. 695.
Laboratory Aids in Diagnosis and Treatment of Rheumatoid Arthritis. B. B. Wells, W. Ross and R. D. Lowrey.—p. 700.
Urologic Problems Confronting the General Practitioner. H. E. Isaacks and D. E. Compere.—p. 706.
Vesicovaginal Fistula: Its Cause, Prevention, and Management. M. K. O'Heeron, N. McDonald and V. Bullock.—p. 709.

Disease of Cervical Intervertebral Disk.—Degenerative and traumatic disturbances of the cervical intervertebral disks are common causes of pain in the neck, shoulder, scapular region, arm, and hand. Roentgenologic examination is of great importance in distinguishing these abnormalities from the presence of cervical rib, the scalenus anticus syndrome, neoplasm of the spinal cord, syringomyelia, and neuritis. The frequency of cervical disk disease is indicated by the fact that of 52 patients with herniated disks, 37 had them in the lumbar and 15 in the cervical region. This report is concerned with 23 patients with surgically proved cervical disk disturbances causing compression of the cervical roots. All the lesions occurred at either the fifth to sixth or sixth to seventh cervical interspaces. The cervical spine was normal on lateral roentgenograms in only 4 patients, but in 19 roentgenograms revealed disturbances of the cervical curve, narrowing of an interspace, osteophytic proliferation of vertebral margins, or combinations of the three. Myelography was performed for 21 of the 23 patients and in 19 evidence of cervical root involvement was seen. The abnormalities seen in posteroanterior cervical myelograms are as follows: 1. The radiolucency over a disk is exaggerated. 2. A lateral compression of the root is indicated by broadening of the root bundle shadow within the sleeve. 3. The root and its sleeve shadow may be medially displaced so that the root complexes on one side do not appear in a straight vertical line. 4. The root sleeve shadow on one side or the other may be pushed cephalad so that the intervals between the shadows on one side are not equidistant. 5. There may be obliteration of the entire root sleeve shadow with greater or less indentation of the parent oil column. In a little more than half of the patients obvious myelographic abnormality was associated with extradural lesions. The remainder of the patients had small defects that might easily have been overlooked on fluoroscopy and even on roentgenograms if only small amounts of medium had been used.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

59:495-550 (Oct.) 1951

Problem of Common Duct Exploration at Time of Cholecystectomy. J. W. Baker and J. J. Koutsky.—p. 495.
Corpus Carcinoma. H. C. Stearns.—p. 504.
Some Phases of Uterine Bleeding Problem. C. E. McLennan.—p. 512.
Studies in Pathology of Abnormal Uterine Bleeding. A. N. Webb.—p. 516.
*Streptokinase and Streptodornase in Suppurative Lesions. C. Morrell and J. A. Weinberg.—p. 524.
Congenital Anomalies in Offspring of Consanguinous Union: Case Report. E. Melinkoff.—p. 529.
Single Dose Low Spinal Anesthesia in Obstetrics: Report on 4,000 Cases. H. P. Torkelson and C. L. Cooley.—p. 533.
Metallic Cap Replacement of Radial Head Following Fracture. C. R. Carr and J. W. Howard.—p. 539.

Streptokinase and Streptodornase in Suppurative Lesions.—Streptococci produce, among other substances, two enzymes that in combination can liquefy the solid portion of purulent exudates. The enzymes, streptokinase and streptodornase, may be obtained in almost pure form in broth cultures of streptococci in bacteria-free filtrates. Streptokinase acts on fibrin, and streptodornase acts on desoxyribose nucleoprotein. When instilled into collections of purulent exudate in humans, the enzymes act on the substrate of debris for about 20 hours. After this time the liquefied exudate can be withdrawn readily. The authors of this paper are currently employing these enzymes in treatment of various conditions, and describe representative cases to illustrate results obtained with this method of enzymatic debridement. In the first patient, who had secondary empyema with extensive compression of the right lung after a spontaneous pneumothorax, the very thick fibrous empyema membrane was not affected by streptokinase and streptodornase and it was necessary to adopt other means of treatment. The second patient had a severe systemic reaction (elevated temperature of 103 F and malaise) to the instillation of the enzymes into the pleural space. While continued treatment might have led to further expansion of the lung, probably enzymatic activity alone would not have freed the captive lung entirely. Case 3 illustrates that a satisfactory result may be obtained in relatively prolonged empyema if there is no fibrous barrier to prevent reexpansion of the lung after the enzymatic removal of the exudative coagulum and debris. The fourth case demonstrates diagnostic use of enzymatic debridement. Initial attempts to outline the extensive and tortuous sinus tract had been unsuccessful. Clearance of this solid matter permitted the free flow of radiopaque medium, giving concise information regarding the limits of the abscess.

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Acta Endocrinologica, Copenhagen

8:97-192 (No. 2) 1951. **Partial Index**

Analysis of Gonadotrophic Activity of Ultrafiltration Concentrate of Human Urine. A. A. H. Kassenaar and F. J. A. Paesi.—p. 125.
Effect of Ovarian Hormones on Metabolism of Acid Soluble Phosphorus in Myometrium. U. Borell.—p. 131.
*Excretion of Gonadotrophin and Androgenic Substances by Normal Men Between 39 and 63 Years of Age: Serial Determinations Over 10 Years. H. I. Schou.—p. 149.
Two Cases of Chronic Renal Disease Simulating Morbus Addison. S. Johnsson, R. Luft, B. Sjögren and J. Waldenström.—p. 165.
Effectiveness of Natural and Synthetic Oestrogenic Substances in Women. A. B. V. Rydén.—p. 175.

Excretion of Sex Hormones by Men.—In order to obtain information about the urinary excretion of sex hormones in elderly males and the male climacteric, quantitative studies were made on 27 healthy men at various times over a period of 10 years. Their ages ranged from 39 to 63. In view of individual variations, it seemed advisable to compare the values in the same persons over a range of years. Gonadotropin was excreted at about the same rate during the period of from 39 to 63 years of age. Earlier investigators had observed an increase in gonadotropin excretion about the age of 60. Although the authors did not observe such an increase, they feel that there may have been too few determinations for the subjects at this age. A steady decrease in the excretion of androgenic substances was observed between the 39th and the 62nd year. Since the relations found between hormone excretion and age agreed essentially with earlier observations, serial determinations on the same subjects provide no more information than single determinations in different subjects.

Archivum Chirurgicum Neerlandicum, Arnhem

3:161-252 (No. 3) 1951

*Diet and Appendicitis. L. W. van Ouwerkerk.—p. 164.
Lobectomy and Pneumonectomy in Tuberculosis: Review of 148 Cases. J. Swierenga.—p. 179.
Diagnosis and Treatment of Pulmonary Cysts. L. D. Eerland.—p. 203.
Bullet Wounds of Spinal Cord and Cauda Equina. M. J. Kingma.—p. 238.

Diet and Appendicitis.—From a review of the literature, van Ouwerkerk gained the impression that acute appendicitis is comparatively frequent and dangerous in Northern Europe, America, and Australia. Among native populations in Asia and Africa, but not among Europeans living there, appendicitis is rare. When the natives eat the richer diets of Europeans, then they also have a higher incidence of appendicitis. Before World War II appendicitis was relatively frequent and serious among the Dutch, both in Europe and Indonesia, but during the war the incidence of appendicitis in the Netherlands decreased. With a diet consisting of inadequate amounts of rice, coarse vegetables, and almost no meat or fats, such as was given to Dutch women and children in a Japanese internment camp, appendicitis almost disappeared. This seems to indicate that there is a relation between diet, particularly the fat content, and the incidence and mortality of appendicitis.

Arquivos de Neuro-Psiquiatria, São Paulo

9:191-302 (Sept.) 1951. **Partial Index**

*Peripheral Trigeminal Neurectomy in Treatment of Trigeminal Neuralgia. J. Zaclis.—p. 228.

Neurectomy in Trigeminal Neuralgia.—Zaclis describes the technique he used for peripheral neurectomy in 34 patients with trigeminal neuralgia, including 3 patients whom alcohol injections of the gasserian ganglion had not benefited. In one of the patients a retrogasserian neurotomy and a bilateral prefrontal leukotomy also failed. Neurectomy of the infraorbital branches was performed on 28 patients, and in eight of them neurectomy of the branches of the mental nerves on the same side was also carried out. Three patients had only neurectomy of the branches of the mental nerve, two had only resection of the peripheral branches of the ophthalmic nerve, and one had only bilateral resection of the infraorbital branches. The operation was followed by immediate and complete relief of pain in all cases. In the postoperative period all the patients experienced moderate paresthesia in the neurectomized areas, but the sensation diminished progressively without special treatment. One patient had transient paralysis of the oculomotor nerve. Facial paralysis and serious complications did not occur. Six patients did not report after the postoperative period. Follow-up observations of 28 patients were made for two or three years. Relief from pain had been maintained two or three years after the operation in 23 patients. Pain reappeared in five patients one or two years after apparent cure had been obtained by operation. In all five cases peripheral neurectomy was repeated with success. The author concludes that peripheral trigeminal neurectomy is a simple, harmless, and useful operation for trigeminal neuralgia. It can be performed without hospitalization. Recurrence of pain is rare and can be controlled by repeated peripheral trigeminal neurectomy. The first and second operations do not contraindicate another operation if it is necessary.

Beiträge zur klinischen Chirurgie, Munich

182:385-514 (No. 4) 1951. **Partial Index**

Value of Preoperative Roentgen Irradiation in Cancer of Breast. H. G. Stoll.—p. 401.
Do the Permanent Results of Surgical Treatment of Gastric Carcinoma Permit Conclusions on the Biology of Carcinoma? E. Ligdas.—p. 412.
Cancer of the Extremities: Report on 20 Cases. M. Lasthaus.—p. 432.
*Treatment of Melanoma. M. Lasthaus.—p. 435.
Diseases of Diaphragm as Cause of Acute Symptoms in Upper Abdomen. U. Graff.—p. 440.
Lingual Struma with Remarks on Goiter Surgery. D. Kulenkampff and P. Heilmann.—p. 458.
Rotation Fractures of Neck of Femur in Lateral Exposure: Their Reposition. H. Bumiller.—p. 465.
Local Wound Prophylaxis with Penicillin Powder. H. F. Oestern.—p. 498.

Biologic Factors of Carcinoma of Stomach.—Ligdas investigated the results of surgical treatment in 1,240 cases of stomach carcinoma to determine the biology of carcinoma. Whether carcinoma is a local or a systemic disease is briefly considered on the basis of results of symptomatic treatment. Factors that influence the growth of carcinoma are discussed and the significance of the body's defense powers, which may be related to the mesenchyme, are stressed. Patients undergoing resection are classified in four groups with regard to metastasis to lymph nodes and other areas. The results obtained in group 1 (cases in which no metastases were found at operation) and in group 2 (cases in which all involved lymph nodes presumably were removed at operation) were not as good as expected. In groups 3 and 4, which included patients in whom regional lymph node metastases or distant metastases could not be removed, some patients had no relapses for several years. These findings suggest that the permanent results were not entirely dependent on the findings at operation, but were probably influenced by the defense function of the body. Although this function is systemic, it is also manifested locally and is really a mesenchymal reaction. In cases in which inflammation around an ulcer degenerates into carcinoma, there is less tendency for metastases to occur and the late results are more favorable. To explain that carcinoma is not merely a local disease and that prolongation of life is not completely dependent on the extent of the operation, the author reviews theories on the pathogenesis of carcinoma and suggests that an explanation might be found in the germinal layer theory, which ascribes special importance to the mesenchyme.

Treatment of Melanoma.—The diagnosis of melanomas can be difficult, because some melanomas have no pigment, and in some cases with metastasis the primary tumor cannot be found. Furthermore, approximately 25% of all melanomas originate in benign pigmented moles and warts. An exploratory biopsy for diagnostic purposes or inadequate excision of a nevus can suddenly cause fatal metastasis from a mole that showed no signs of irregular growth before. The author feels that this fact is not sufficiently appreciated by some practitioners and even some surgeons, and the clinicians are surprised when an apparently harmless "liver spot" suddenly causes massive dissemina-

tion that cannot be checked. The author describes six such cases that he observed in the last three years. One man had had a brown spot on the back of his head for many years. Three weeks after its removal, he was hospitalized for irradiation when the spot recurred, but pulmonary metastases were also present, and he died four weeks later. A similar sequence of events characterized the other cases, and death occurred after several weeks or months. Radical treatment such as amputation should be performed when it is possible. Melanomas in the region of the head, except in the eyes, should be treated by postoperative short-distance irradiation. If a residual tumor remains after irradiation, it should be removed only after a quiescent, growth-free interval of several years. Prophylactic removal may be advisable for dark moles exposed to mechanical irritation.

British Journal of Nutrition, London

5:167-274 (No. 2) 1951. **Partial Index**

*Comparison of Vitamin C Content of Vegetable Stew When Prepared on Large Scale in Open and Pressure Cookers. A. R. P. Walker and U. B. Arvidsson.—p. 167.

Dietary Surveys: Variation in Weekly Intake of Nutrients. J. Yudkin. —p. 177.

Evaluation of Leanness-Fatness in Man: Norms and Interrelationships. J. Brožek and A. Keys.—p. 194.

Excretion of Vitamin C in Urine Following Repeated Administration of Big Test Doses. J. Sigurjonsson.—p. 216.

Composition of Human Milk with Special Reference to Relation Between Phosphorus Partition and Phosphatase and to Partition of Certain Vitamins. R. Chanda, E. C. Owen and B. Cramond.—p. 228.

Relative Nutritional Values of Animal and Vegetable Proteins for Animals. K. J. Carpenter.—p. 243.

Conversion Factors for Vegetable and Animal Foods for Human Consumption. K. L. Blaxter.—p. 250.

Economic and Statistical Aspects of Vegetable and Animal Foods. D. A. Boyd.—p. 255.

Nutritive Value of Vegetable Proteins and Its Enhancement by Admixture. H. Chick.—p. 261.

*Clinical Picture in Children Fed After Weaning on Predominantly Vegetable Diet. L. Wills.—p. 265.

Nutritional Adequacy of Vegetable Substitute for Milk. R. F. A. Dean. —p. 269.

Vitamin C Content of Stews Prepared in Open and Pressure Cookers.—In the large compound kitchens of the gold mines of the Witwatersrand, where food is prepared for more than 250,000 Bantu workers, the present trend is to replace open cooking by pressure cooking. Vegetable stew is the chief, and sometimes the sole, source of vitamin C for the Bantu workers, among whom scurvy is seldom observed, and therefore the vitamin C content of stew cooked on a large scale by both methods has been compared. Experiments have shown good retention of the vitamin with either method and a slightly better retention with open cooking, the mean values for tests carried out on four separate days being 89% and 79%, respectively. The usual helping of stew prepared by either method provides daily 45 to 50 mg. of vitamin C, an amount that may be considered adequate. The authors conclude that, as regards vitamin C retention, there is no reason why pressure cooking should not be adopted.

Children Fed on a Vegetable Diet.—The clinical findings in infants and children fed after weaning on predominantly vegetable diets are the subject of this paper. The author describes malignant malnutrition, kwashiorkor, or fatty liver disease of Bantu infants. This syndrome, which seems to be the extreme effect of such diets, is not limited to the African; Czerny's "Mehlnährschaden" (nutritional deficiency from starchy foods) is probably the same condition in European children. Since it was believed that the children with kwashiorkor were dying of protein starvation and excess carbohydrate and that with such fatty livers administration of fat was contraindicated, it was decided to force-feed them with maas, which is curds made from skim milk. After a week skimmed milk powder was added to the maas and later a full mixed diet supplemented with extra milk was given. Improvement was rapid in most cases. After a few days diuresis occurred, resulting in rapid loss of weight followed by a steady gain. The diarrhea usually ceased in a few days. The liver gradually decreased in size. The serum protein values increased steadily, but the blood count fell slightly at first and then rose slowly.

British Journal of Surgery, London

39:97-192 (Sept.) 1951

Perivascular Neural Pattern of Femoral Region. F. R. Wilde.—p. 97.

Intestinal Obstruction Produced by Failure of Intestinal Rotation: Description of Case. R. Spencer.—p. 105.

Presacral Perirenal Pneumography. J. Blackwood.—p. 111.

Mediastinal Goitre. E. Wilson.—p. 120.

Orbital Complications of Head Injury. R. S. Hooper.—p. 126.

Diverticulosis of Jejunum—A Clinical Entity. I. M. Orr and J. Y. W. Russell.—p. 139.

*Differential Diagnosis of Malignant Disease of Peritoneum. O. Daniel. —p. 147.

*Cerebral Angiography in Abscess of Temporal Lobe. P. H. Schurr. —p. 156.

Trochanteric Fractures of Femur. W. G. France and C. R. Berkin. —p. 166.

Differential Diagnosis of Malignant Disease of Peritoneum.—Malignant disease of the peritoneum can usually be diagnosed from its gross appearance, but seven cases illustrating diagnostic difficulties are discussed in this paper. In one patient with ascites, fibrous stricture of the ileum, and enlarged regional lymph nodes, the peritoneum covering the small intestine and its mesentery was studded with round white nodules, suggesting tuberculosis or cancer. Although histological study of the nodules and lymph nodes showed no evidence of cancer or tuberculosis, necropsy two weeks later revealed a round-celled carcinoma of the stomach. In another case peritoneal carcinomatosis appeared to be a strangulated hernia. In the remaining cases carcinomatosis was simulated by peritoneal nodules due to tuberculosis, polyarteritis nodosa, encapsulated food particles, and fibrosis in a chronic hernia. The commonest malignant disease of the peritoneum is secondary carcinoma, and this usually arises from the transcelomic dissemination of a primary abdominal carcinoma. Occasionally the peritoneum is involved by lymph or blood-borne metastases from an extra-abdominal carcinoma, sarcoma, or other tumor. Primary tumor of the peritoneum is rare. Malignant disease of the peritoneum appears in the following forms: discrete nodules, plaque-like masses, diffuse adhesive forms, flat subperitoneal forms, cystic forms, pedunculated forms, "skin graft" forms, pseudomyxoma peritonei, and bizarre forms. Each of these may be simulated by a variety of lesions. The only peritoneal appearances pathognomonic of malignancy are umbilicated nodules and large masses of chaotically arranged new tissue. Operative diagnosis, therefore, often depends on associated findings. Histological examinations should always be made and if they are inconclusive for diagnosis, examination with a polarizing microscope and mucicarmine-stained sections may be helpful.

Cerebral Angiography in Abscess of Temporal Lobe.—The diagnosis of brain abscess is often difficult and may be especially so in patients receiving systemic antibiotic treatment for mastoiditis or other infections. In these cases symptoms may be absent, the most equivocal or minimal abnormal signs may be significant, and slight changes in the cerebrospinal fluid may be the only warning of the complication. Radiographs may occasionally show pineal shift and, more rarely, gas in the cavity of the abscess; but oftener there is little indication of such a lesion. Accessory methods of diagnosis have thus become increasingly necessary. For the diagnosis of temporal lobe abscess electroencephalography has not been sufficiently accurate, and air ventriculography and encephalography have been regarded as somewhat hazardous. Angiography, however, has been found to be a safe and reliable aid. Twelve patients with temporal lobe abscess have been studied by angiography at Radcliffe Clinic. In 9 of the 12 cases the source of infection was mastoiditis, one was bronchogenic, one followed a streptococcal meningitis presumed to have arisen from an infected tooth socket, and in the other case the source was probably in the thorax. In nine cases angiography was performed before aspiration or removal of the abscess. In the other three it was performed after aspiration and before excision to provide further information about the lesion. The angiographic technique consisted of percutaneous puncture of the common or internal carotid artery under local anesthesia, followed by the injection of 10 to 12 cc. of a 35% solution of iodopyracet ("diodone") as a contrast medium. Radiographs were taken in anteroposterior and lateral projections, two, four, and eight seconds after the start of the injection. There

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were no complications attributable to the procedure and valuable information was obtained. The relation of the vascular displacements to the lesion are discussed and displacements of the middle cerebral group are shown to be roughly proportional to the total volume of the abscess.

British Journal of Urology, Edinburgh

23:197-292 (Sept.) 1951

Case of Cavernous Haemangioma of Bladder. E. W. Riches.—p. 204.
*Carcinoma of Urethra. E. W. Riches and T. H. Cullen.—p. 209.
Primary Carcinoma of Male Urethra. E. M. Nanson.—p. 222.
Case of Adenocarcinoma of Rete Testis. A. W. Badenoch and C. Dukes. —p. 230.
Purpura of Urogenital Tract. K. W. Martin.—p. 233.
Cutaneous Metastases from Renal Neoplasms. C. G. Scorer.—p. 250.
Malignant Transformation Following Orchidocleisis. D. W. Thomas. —p. 260.
Diffuse Pulmonary Lymphatic Carcinomatosis Due to Renal Carcinoma Showing Cytoplasmic Inclusions. C. F. Ross.—p. 263.
Pyrexia as Sole Presenting Symptom of Hypernephroma. B. C. Rowlands. —p. 267.
Two Cases of Urachal Cyst. J. G. Callanan.—p. 271.

Carcinoma of Urethra.—Riches and Cullen review observations on 34 patients with carcinoma of the urethra, who had been under their own care or that of their colleagues. It is slightly commoner in women than in men, and this series included 15 men and 19 women. The average age was 59 (54½ for men and 62½ for women). The authors believe venereal disease has been overemphasized in the etiology of this tumor; in their patients it was suggested only in the group of men with tumors of the bulbocavernosus. In four of nine cases there was a history of gonorrhea and of stricture in two of nine. Venereal disease has not been regarded as such a predisposing factor in females. The authors differentiate three well-defined groups of lesions: (1) those involving the anterior urethra in males and the urethral orifice in females; (2) bulbomembranous lesions in males and vulvourethral lesions in females; and (3) lesions associated with bladder growths. The survival rate was highest in the first group. It is stressed that in both sexes the more anterior the growth the better the prognosis. With tumors deep in the urethra the following factors are important: (1) Symptoms occur later or are unrecognized in the early stages. (2) Lesions are less accessible to treatment. (3) Metastases are commoner. A growth of the urethra demands examination of the bladder, and growth of the bladder, especially if it occurs near the neck, demands examination of the urethra. Metastases in inguinal nodes are common enough (50%) to warrant considering treatment either by removal or irradiation. Distant metastases occur in about one-third of cases. When a bladder growth invades the urethra the prognosis becomes worse because of the tendency to distant metastases. Radical surgery is applicable in a minority of cases but gives a good prospect of survival. Irradiation is necessary in many cases and provides excellent palliation in some. Tissue from any caruncle in the female or periurethral abscess in the male must be examined microscopically.

British Medical Journal, London

2:807-862 (Oct. 6) 1951

William Harvey and the Scholastic Tradition. J. Young.—p. 807.
Blood Cholinesterase Levels and Range of Personal Variation in Healthy Adult Population. S. Callaway, D. R. Davies and J. P. Rutland. —p. 812.
Blood Cholinesterase Levels in Workers Exposed to Organo-Phosphorus Insecticides. J. M. Barnes and D. R. Davies.—p. 816.
Failure of Oral D.D.T. to Induce Toxic Changes in Rats. G. R. Cameron and Kwok-Kew Cheng.—p. 819.
Preliminary Field Trials on New Schizonticide. H. M. Archibald.—p. 821.
Value of Gastric Biopsy in Study of Chronic Gastritis and Pernicious Anaemia. I. J. Wood.—p. 823.
Vitamin B_{12} in Megaloblastic Anaemia of Pregnancy and Tropical Nutritional Macrocytic Anaemia. S. Chaudhuri.—p. 825.
Outbreak of Respiratory Tuberculosis in a School. R. T. Bevan, P. T. Bray and J. F. Hanly.—p. 828.
*Surgery of Parotid Tumours: Exposure of Main Trunk of Facial Nerve. H. S. Shucksmith, T. M. Boyle and W. K. J. Walls.—p. 830.

Parotid Tumors and the Facial Nerve.—Willis is quoted as saying that 90% of all salivary tumors are pleomorphic adenomas, and that, while most of these tumors grow slowly and appear to be well circumscribed, they are not entirely benign. He believes that the recurrence rate after inadequate operation may be as high as 62%, and that the principal etiological factor is the conservative type of operation used because of fear of damage to the facial nerve. Shucksmith and associates have not found Bailey's analogy of the facial nerve as the filling in a parotid sandwich of any value in removing parotid tumors, but their experience with facial nerve branches and filaments makes them accept McKenzie's analogy of the parotid growing like a creeper, weaving itself into the meshes of a trellis-work fence (the facial nerve). It seemed to them that the facial nerve could be preserved with wide resection of a superficial parotid tumor by exposing the main trunk of the facial nerve immediately above the stylomastoid foramen and then working forward to the main divisions and filaments as need be. This method is described briefly.

2:863-920 (Oct. 13) 1951

Chemical Manipulation of Food. E. Mellanby.—p. 863.
*Acute Tuberculous Septicaemia with Leucopenia. K. Ball, H. Joules and W. Pagel.—p. 869.
Acrosclerosis. S. C. Truelove and H. M. Whyte.—p. 873.
Acrosclerosis. A. S. Ramsey.—p. 877.
Abacterial Cystitis: Report of Three Cases and Isolation of Spirochaete from One. J. W. Czekalowski and G. O. Horne.—p. 879.
Value of External Cephalic Version Under Anaesthesia. D. Freeth and J. S. MacVine.—p. 881.
Mass B.C.G. Vaccination in a British Colony. A. W. W. Robinson. —p. 884.
A County B.C.G. Campaign. P. J. Burke.—p. 887.
Congenital Duplications of Small Intestine. J. C. Barrett.—p. 889.

Acute Tuberculous Septicemia with Leukopenia.—Three cases of tuberculous septicemia associated with leukopenia are reported. These occurred in two men, aged 54 and 56, respectively, and a woman, aged 47. They are compared with eight previously reported cases of this type. Chills, anorexia, and malaise were common symptoms. A high fever was always present and an enlarged spleen was often felt. Severe leukopenia without a striking relative neutropenia was the commonest finding in the blood. An aplastic anemia and a thrombocytopenia were also seen. The course invariably was rapidly downhill, with death occurring between 3 and 12 weeks after appearance of the first symptom. Acute tuberculous septicemia followed a fresh primary infection or a genuine reinfection in all three cases. At necropsy, multiple necrotic foci were seen in the liver and spleen in Case 1, but in Cases 2 and 3 no characteristic changes were grossly visible in any organ. In all cases histological examination revealed numerous necrotic foci containing acid-fast bacilli in many organs. It is considered that the occurrence of these organisms in the bone marrow accounts for the leukopenia and anemia. The difficulty in diagnosis lies in the absence of characteristic features in this disease. Examination of the bone marrow for tubercle bacilli is recommended. Streptomycin should be given a trial in a suspected case.

Bruxelles-Médical, Brussels

31:1961-2012 (Sept. 23) 1951

*Synergy Between Treponemicidal Activity of Bismuth and of Penicillin. C. Levaditi and A. Vaisman.—p. 1971.
Two Cases of Bivitelline Twin Pregnancies with Death of One Fetus. E. Spehl.—p. 1978.

Synergistic Treponemicidal Effect of Bismuth and Penicillin.—Rabbits in which syphilis was produced by subscrotal and intratesticular inoculation of fragments from primary syphilitic lesions of rabbits were treated with a bismuth-procaine preparation ("procrital") alone, with penicillin alone, or with a combined preparation made up by dissolving 100,000 units of penicillin in 1 cc. of "procrital." The latter compound contains 10.5 mg. of bismuth and 5 mg. of procaine per cubic centimeter. A dose of 2 to 5 mg. of bismuth (in the form of "procrital") per kilogram of body weight, induced rapid cicatrization of the scrotal syphilitic lesions and disappearance of the Treponema pallidum from the blood in all the animals treated and sterilization of peripheral lymph nodes in 50%. A single dose of 20,000 units of penicillin induced rapid cicatrization of the syphilitic lesions and even more rapid disappearance of the spirochetes from the blood but not from the peripheral lymphatic system. A specific local recurrence was observed after treatment was stopped.

Synergy between bismuth and penicillin was apparent in that radical sterilization of the peripheral lymphatic system and disappearance of the spirochetes from the blood occurred in all the rabbits treated with the combined bismuth-penicillin preparation.

Clínica Tisiológica, Rio de Janeiro

6:125-258 (April-June) 1951. **Partial Index**

*Evolution of Allergy According to Schemes of BCG Oral Vaccination. J. Rosenberg, J. N. Aun and B. Macarron.—p. 125.

Allergy from BCG Vaccination.—The evolution of tuberculin allergy from oral BCG vaccination was observed in a group of 1,460 newborn infants living with their parents, and 64 infants between the ages of 10 days and 3 years living in creches or asylums. The families of most of the infants were healthy, but in some families there were tuberculous contacts. Newborn infants were given the vaccine by the following schemes: 1. A dose of 30 mg. of BCG vaccine was given to 491 infants every other day up to a total dose of 90 mg. during the first 10 days of life. 2. A single dose of 100 mg. was given during the first 2 weeks of life to 271 infants. 3. Intensive vaccination with a dose of 100 mg. was given every two weeks, up to a total of six doses to 117 infants, and every month, for six months to 580 infants. The older 65 infants had daily BCG vaccination in increasing doses from 10 to 100 mg. up to a total dose of 1,190 mg. in 28 consecutive days. Serial Mantoux tests with dilutions up to 1:10 were made from one to two months after vaccination up to a period of two or three years. In newborn infants who were vaccinated by the first and second schemes the percentage of positive reactions was higher and the allergy was of longer duration than in infants who had more frequent revaccinations by the other schemes. A greater immunity was conferred by the more prolonged methods of vaccination, however, as is proved by the complete absence of tuberculosis in these infants, even those with tuberculous contacts. The results showed that allergy and immunity given by BCG vaccine are independent, that they are inversely proportional, and that the immunizing effect of BCG vaccine is not hindered when infants are in contact with tuberculous patients.

6:259-396 (July-Sept.) 1951. **Partial Index**

Evolution of the Laryngo-Tracheo-Bronchoscope. U. Pinheiro Guimarães. —p. 287.

*Radiological Frequency of Healed Primary Lesions in Non-Tuberculous Adults. R. Fernandes, F. Poppe and O. Reis.—p. 371.

Healed Primary Lesions in Nontuberculous Adults.—Examination of 1,802 x-ray films of nontuberculous adults in Rio de Janeiro disclosed 576 healed primary lesions. Almost twice as many of these lesions were on the right side as on the left. In a sample of 130 of these lesions 53.08% were located in the lower third of either lung, 33.85% in the middle third, and only 13.07% in the upper third. These relative proportions were compared with those found by earlier workers, both at autopsy and on examination of x-ray films, and the only difference noted was that in the present series lesions in the upper third of the left lung were slightly more numerous than those in the upper third of the right lung.

Deutsche medizinische Wochenschrift, Stuttgart

76:1229-1260 (Oct. 5) 1951. **Partial Index**

Endangiitis Obliterans: Concept of the Disease and Its Evaluation in Compensation Cases. N. Wolf.—p. 1229.

Significance of Capacity to Chew for Digestive Disturbances: Indication for Dental Prostheses. W. Kaufmann.—p. 1231.

Erythrocyte Sedimentation Rate, Weltmann's Coagulation Band and Cadmium Sulfate Reaction in Patients with Neurologic Disorders. B. Folkers and S. Moebius.—p. 1234.

*Radioactive Phosphorus in Treatment of Polycythemia. W. Horst and H. Sauer.—p. 1237.

Radioactive Phosphorus in Polycythemia.—Horst and Sauer review their experiences with radioactive phosphorus treatment in eight patients of whom six had polycythemia with erythrocyte counts between 7,000,000 and 8,000,000. Four of them had been treated previously for several years with phenylhydrazine or venesection, the other two received radioactive phosphorus from the beginning. All but one of the six responded favorably to the isotope, which is injected intravenously in isotonic sodium chloride solution. Treatment is usually begun with 0.06 mc. per kilogram of body weight and may be repeated after three months if necessary. A fall in erythrocyte counts was usually evident after from four to five weeks. Treatment with radioactive phosphorus is more beneficial than fractionated whole body roentgen irradiations, chiefly because of greater selectivity. Irradiation therapy inhibits the bone marrow, whereas venesection and hemolysis with phenylhydrazine stimulate medullary activity. Advantages of treatment with radioactive phosphorus are a decreased tendency toward development of thrombosis and avoidance of roentgen intoxication. The gradual reduction in the quantity of blood is of advantage in patients with circulatory impairment. Complications like temporary anemia, leukopenia, and thrombocytopenia are usually not dangerous and no irradiation-induced changes could be demonstrated in the parenchymal organs. There is no proof that polycythemia is more likely to be followed by leukemia during treatment with radioactive phosphorus than with other treatments.

76:1261-1292 (Oct. 12) 1951. **Partial Index**

Leading Viewpoints for Treatment of Recent Intracranial Injuries. F. Loew.—p. 1261.

Late Damage Caused by Deficient Nutrition, and Circulatory Disturbances. K. E. Vogt.—p. 1265.

*Treatment of Marchiafava Anemia; Transfusion of "Washed" Erythrocytes. H. Schubothe and M. Matthes.—p. 1274.

Marchiafava Anemia.—The superiority of washed erythrocyte transfusions over whole blood transfusions in the treatment of Marchiafava's chronic hemolytic anemia is demonstrated in the following two case histories. In one patient with this disease whole blood transfusions appeared to be harmful rather than beneficial. After each of eight weekly transfusions of 320 to 400 cc. of whole blood from a donor with the same blood groups, the patient felt extremely weak, the nocturnal hemoglobinuria was increased, and there was occasional diurnal hemoglobinuria. The patient's erythrocyte count decreased during the treatment from 2,000,000 per cubic centimeter before the first transfusion to 800,000 per cubic centimeter after the last transfusion. A gradual increase in the erythrocyte count occurred after the transfusions had been discontinued. The second patient likewise had continuous hemoglobinuria and a decrease in erythrocyte count while receiving whole blood transfusions, with an increase in the erythrocyte count after the transfusions were stopped. Six months later an exacerbation reduced his erythrocyte count to 800,000 per cubic centimeter and his hemoglobin to 18%. Transfusions of erythrocytes washed in isotonic sodium chloride solution corresponding to 3½ liters and 1.2 liters of whole blood, respectively, were given for six days, and after an interval of two months, for two more days. These transfusions were well tolerated; within six days the total number of erythrocytes increased from 800,000 to 4,000,000 per cubic centimeter. Three months after the last washed red blood cell transfusion the erythrocyte count was 2,500,000 while two months later it was 2,300,000. Because causal treatment of Marchiafava anemia has not yet been possible, and other therapeutic trials have failed, blood transfusions are of decisive importance. In these patients the hemolytic reactions precipitated by whole blood transfusions were apparently due to a component of the donor's serum that enhanced the specific hemolytic mechanism of Marchiafava anemia. These reactions were prevented by transfusions of washed red blood cells. This method seems to be indicated in all cases in which intolerance to the donor's blood depends on plasma factors, and in cases that require a rapid and pronounced increase in number of erythrocytes.

Glasgow Medical Journal

32:257-282 (Sept.) 1951

Convulsions in Childhood and Their Relation to Epilepsy. R. A. Shanks. —p. 257.

Management of Pregnant Tuberculous Diabetic. J. P. McIntyre and W. H. D. Scotland.—p. 268.

Preliminary Survey of Dysphagia Due to Malignant Disease. S. Young and J. C. Watt.—p. 273.

Convulsions in Childhood and Epilepsy.—Shanks believes isolated convulsive episodes in childhood differ from recurrent spontaneous convulsions of epilepsy only in degree. Sharp distinctions cannot be made between types of convulsions, which range

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from the isolated fit to uncontrollable epileptic seizures. With the striking fall in the incidence of rickets in the last 25 years there has been an equal decrease in the incidence of tetany and spasmophilic diathesis. The concept of a variable convulsive threshold which depends on the interrelation of constitutional and external factors is discussed with regard to "casual" convulsions and epilepsy. Spontaneous convulsions are more likely to recur than those associated with infection, but this can be only a rough guide to the prognosis of an individual case. If all infantile convulsions are considered, the recurrence rate is about 12%. This reassuringly low figure should be remembered in regard to any first convulsion in a child. A convulsion associated with febrile illness is likely to be benign if it occurs at the onset; a fit which occurs during the course of an acute infection, unless it is agonal, suggests either the onset of a complication or that recurrence is likely. The author stresses that under favorable conditions epilepsy is preventible. Uncontrolled convulsions lead in themselves to progressive mental impairment. It follows that no child or adult should be allowed to have repeated fits without energetic attempts to control them. It is better to use phenobarbital unnecessarily than to wait until repeated fits have confirmed the diagnosis. The control of epilepsy by adequate therapy is second in importance only to prevention by prompt and persistent treatment of convulsions in early life.

Hospital, Rio de Janeiro

40:327-490 (Sept.) 1951. **Partial Index**

*Involvement of the Pericardium in Hodgkin's Disease. Q. H. de Mesquita.—p. 327.
*Surgical Diseases of Thyroid Gland. R. A. Dos Santos.—p. 469.

Pericardium Involvement in Hodgkin's Disease.—Only 27 cases in which Hodgkin's disease involved the heart have been reported, including that of the 15-year-old girl observed by the author. Her illness began in 1945, when painless swellings appeared in her neck and left axillary region. Medical treatment failed, but radiotherapy brought about great improvement which lasted for three years. A tumor mass then appeared at the level of the upper third of the sternum and rapidly increased in size. Swelling also recurred in the left axillary region. The patient had lost about 7 lb. (3.2 kg.) in the two months before she was seen by the author in 1948, and suffered from dyspnea on exertion. A diagnosis of Hodgkin's disease with pericardial effusion was made and treatment with nitrogen mustard begun. Daily doses of 4 mg. were given by rapid intravenous injection for four consecutive days, or a total dose of 16 mg. for a body weight of 115 lb. (52 kg.). Some distress was caused by the treatment, and the patient lost about 15 lb. (7 kg.) in the 12 days following the first injection. She began to improve at the end of the second week; her weight increased, the swellings diminished until they were scarcely perceptible, and the pericardial effusion was reabsorbed. Her condition fluctuated during the next 14 months, deteriorating rapidly toward the end, with invasion of the left lung and recurrent pericardial effusion, which produced a fatal hypodiastolic cardiac insufficiency.

Thyroid Diseases Treated Surgically.—Dos Santos reports on 80 cases of thyroid disease treated by subtotal thyroidectomy. Preoperative preparation of patients with severe hyperthyroidism consisted of propylthiouracil until the patient's condition showed a clinical improvement and the basal metabolism was reduced to +30% at the maximum. General measures, such as rest, hydration, special diet, administration of vitamins, and correction of deficiencies, were also employed. Lugol's solution was given in the 10 days preceding operation. It was used alone in cases of less severe hyperthyroidism, and in cases of nontoxic goiter to prevent development of toxic goiter and to improve its condition for surgery. Preoperative treatment of patients in Rio Preto (Brazil) is often complicated by anemia and verminosis. Patients who have been well prepared for operation are usually discharged on the third or fourth day. Part of the clips are removed 24 hours after operation; in 48 hours all the clips and the drain have been removed, insuring an inconspicuous scar. Dos Santos uses local anesthesia almost exclusively, preceded by medication with morphine, atropine, and secobarbital (seconal®). Local anesthesia is preferred because it facilitates checking of the function of the recurrent nerve by speech. When this nerve or one of its branches is injured or caught in a ligature, it may lead to a temporary paralysis of the vocal cords. Such transient lesions of the recurrent nerve were the principal postoperative complications, and there were no cases of severe hemorrhage or postoperative tetany. Hypoparathyroidism occurred in two cases. There was one death, which was attributed to the anesthesia.

Irish Journal of Medical Science, Dublin

309:393-440 (Sept.) 1951. **Partial Index**

Chemotherapy in Urinary Tuberculosis. T. J. D. Lane.—p. 393.
Carcinoma of Cervix. O. Chance.—p. 406.
Cold Vasoconstriction and Vasodilatation. A. D. M. Greenfield, J. T. Shepherd and R. F. Whelan.—p. 414.
Electrocardiographic Changes Following Mitral Valvulotomy. S. P. O'Toole.—p. 427.
Fibrocystic Disease of Pancreas. E. E. Doyle and P. N. Meenan.—p. 432.

Lancet, London

2:601-646 (Oct. 6) 1951

Practice and Consequences of Splenectomy. H. C. Edwards.—p. 601.
*Early Rising in Obstetrics and Gynaecology. W. F. T. Haultain and D. J. Mc.I. Irvine.—p. 607.
Pharmacology of Bis 3-3'-(4' Oxycoumarinyl) Ethyl Acetate (Tromexan). M. Stirling and R. B. Hunter.—p. 611.
Calciferol, Streptomycin and Para-Aminosalicylic Acid in Pulmonary Tuberculosis. J. Fielding and J. J. Maloney.—p. 614.
Case of Eclampsia Treated with Hexamethonium Bromide. C. J. Penny and R. P. W. Shackleton.—p. 617.
Recovery After Poisoning with Di-Nitro-Ortho-Cresol. A. B. Pollard and J. F. Filbee.—p. 618.
Antithyroid Activity of 2-Carbethoxythio-1-Methylglyoxaline. A. Lawson, C. Rimington and C. E. Searle.—p. 619.

Early Ambulation in Obstetrics and Gynecology.—Early ambulation was practiced in 1,070 consecutive obstetric cases, in 28 cases of cesarean section, and in 285 cases in which major abdominal and vaginal operations were performed. The patients were allowed to get up usually within 24 hours of, and not later than 36 hours, after delivery or operation. This seemed to be beneficial to them and no untoward complications occurred. There was no morbidity in private puerperal cases and the morbidity in the hospital puerperal cases was 0.4%, which is extremely low for a hospital admitting both emergency and scheduled cases. Early ambulation did not interfere with the healing of the perineum, and involution seemed to be accelerated. The presence of red lochia may possibly be prolonged. In cases of pelvic-floor repair healing was not hindered by early ambulation, and catheterization was needed far less often. Sickness, flatulence, and distention seemed to be relieved. The decrease in use of bedpans was appreciated by both patient and nurse. Though early ambulation is advocated for hospitalized puerperal women it may be contraindicated for obstetrical patients in their homes. In the hospital, the fact that the patient is allowed up early should not shorten her hospitalization during the puerperium; she needs rest, supervision, and freedom from household worries, which could not be obtained at home. In hospital early ambulation seems to be beneficial not only to the puerperal patient but even more so to the patient who has undergone a major operation.

Calciferol, Streptomycin, and *p*-Aminosalicylic Acid in Pulmonary Tuberculosis.—Seven patients with pulmonary tuberculosis in whom gross cavitation was present on admission were treated with streptomycin, *p*-aminosalicylic acid, and calciferol. Streptomycin hydrochloride was given in doses of 0.5 gm. twice a day and sodium *p*-aminosalicylic acid in doses of 16 gm. per day in four divided doses of 4 gm. Calciferol was given in doses of 600,000 units in oil once a week intramuscularly for three weeks, followed by two doses at two week intervals and an additional 600,000 units every four weeks until nine doses had been given, a total of 5,400,000 units in five to six months. Of the 5,400,000 units, 2,400,000 were given in the first month. The principle followed was that, when pronounced activity of the disease was shown by rise of temperature, streptomycin and *p*-aminosalicylic acid were given first and calciferol was added shortly afterward; when there was little or no rise of temperature, administration of all three drugs was started at once. Three patients who received the full course of calciferol with *p*-amino-

salicylic acid and streptomycin for four to six months showed a remarkable degree of resolution and contraction of the infiltrative lesions. Cavitation was no longer demonstrable on roentgenograms at the end of treatment and had not reappeared 18, 15, and 12 months, respectively, after the start of therapy. Two patients received calciferol for only one and two months, respectively; reappearance of cavitation coincided with the induction of pneumoperitoneum shortly after the cavities had collapsed, and mechanical factors resulting from the pneumoperitoneum may have contributed to this effect. Two patients showed no response to one eigth-week course of streptomycin and *p*-aminosalicylic acid, but a second course of these drugs combined with calciferol resulted in rapid diminution in cavity size. In six of the seven patients cavitation was considerably reduced; in four of these a significant degree of tension was present. These results suggest an improved response to chemotherapy when calciferol is given concurrently. According to the authors, calciferol alone may produce an initial exudative reaction at the site of the lesion, that may result in dissemination. This effect is controlled by chemotherapy. The local tissue reaction increases the accessibility of the lesion to chemotherapy, and this early phase is followed by an increased rate of healing when calciferol is continued.

Presse Médicale, Paris

59:1257-1280 (Sept. 29) 1951. **Partial Index**

*Vaccination Against Tetanus with Tetanus Toxoid and Combined Immunization Before and During Second World War. G. Ramon.—p. 1257.
*Passage of Streptomycin Through Placenta in Pregnancy. E. Grasset, H. de Watteville and P. Dossena.—p. 1265.

Vaccination with Tetanus Toxoid and Combined Immunization.—The protection of troops against tetanus by the use of tetanus toxoid and combined immunization is one of the great triumphs of preventive medicine. Active immunization is secured by three injections of 1 cc. of tetanus toxoid (crude, not refined or concentrated, without alum), at intervals of at least 15 days, followed in one year, or as soon as a wound is received, by a booster injection. Active immunization has many advantages over the passive immunization obtained by injections of tetanus antitoxin; it gives protection against tetanus following unsuspected skin lesions or deep wounds, and the booster doses raise the level and prolong the immunity conferred by the initial vaccination. Ramon, who first described this method in collaboration with Christian Zoeller, discusses the history and results of its use in the allied armies. It proved effective under rigorous conditions of combat, in widely differing regions, where the soil was often contaminated with tetanus bacilli. No cases of tetanus were reported among the American troops engaged in the Battle of Normandy, but cases among the German soldiers in the same field who had not been immunized were relatively numerous. Similar results were obtained in other areas. Combined immunization, or the administration of two or more preparations in a single injection, is based on the principle that certain substances increase the immunizing effect of toxoids. Combining two antigens as dissimilar as a toxoid and a bacterial vaccine or two toxoids of such different specificity as diphtheria toxoid and tetanus toxoid reenforces each antigen and simultaneously produces immunity to both. The number of possible combinations is endless. Diphtheria toxoid combined with tetanus toxoid and antityphoid-paratyphoid vaccine led to the virtual disappearance of diphtheria in the French army by 1939. Combined immunization has proved equally successful against other diseases. It has been used to protect civilians as well as soldiers from typhoid, dysentery, cholera, diphtheria, and tetanus.

Passage of Streptomycin Through the Placenta.—In a study of the passage of antibiotics through the placenta, the authors report a series of 30 cases in which a single dose of from 1 to 2 gm. of streptomycin was administered intramuscularly to women in the hours preceding either delivery at term or surgical interruption of pregnancy. The amounts of streptomycin in the maternal blood, the fetal blood, and the amniotic fluid were measured after 52 to 165 minutes. The results disclosed that this antibiotic, like penicillin, can pass through the placenta from the second month of pregnancy to term, but only in concentrations from 2.5 to 10 times less than those in the maternal blood. The concentrations in the fetal circulation resulting from administration of 1 to 2 gm. to the mother are high enough to assure antibiotic action against streptomycin-sensitive bacteria, especially those producing tuberculosis and brucellosis. Streptomycin administered in these doses just before delivery also protects the mother against puerperal infections and the infant against infections during birth. Streptomycin treatment has enabled women with tuberculosis to go through pregnancy and the postpartum period without aggravation of their general condition or pulmonary symptoms.

Quarterly Journal of Medicine, Oxford

20:205-312 (July) 1951

Aminoacid Metabolism in Cystinuria. C. E. Dent and G. A. Rose.—p. 205.
Potassium Deficiency in Ulcerative Colitis. M. Lubran and P. M. McAllen.—p. 221.
Radiological Study of Pulmonary Infarction. D. S. Short.—p. 233.
Correlation Between Radiological Appearances and Clinical and Spirometric State in Emphysema. A. G. W. Whitfield, O. E. Smith, D. G. B. Richards and others.—p. 247.
Mechanism and Significance of Cold Pressor Response. H. H. Wolff.—p. 261.
Association of Raynaud's Phenomena, Chronic Haemolytic Anaemia, and Formation of Cold Antibodies. D. G. Ferriman, J. V. Dacie, K. D. Keele and J. M. Fullerton.—p. 275.
Hereditary and Familial Aspects of Toxic Nodular Goitre (Secondary Thyrotoxicosis). L. Martin and R. A. Fisher.—p. 293.
Occurrence of Haemophilia in Human Female. C. Merskey.—p. 299.

Potassium Deficiency in Ulcerative Colitis.—Low levels of serum potassium associated with muscular weakness have been observed in the following diseases: Cushing's syndrome, Addison's disease with overdosage of desoxycorticosterone acetate, chronic nephritis, diabetes mellitus, intestinal obstruction with vomiting, and various conditions treated with cortisone or *p*-aminosalicylic acid. Some types of diarrhea are also known to produce potassium deficiency including infantile diarrhea, tropical sprue, idiopathic steatorrhea, and secondary steatorrhea. The only reference to potassium deficiency in ulcerative colitis that Lubran and McAllen found was made by Gardner and his associates, who said that they had seen two such cases. During the past two years, Lubran and McAllen found evidence of potassium deficiency in 4 of 30 cases of ulcerative colitis. A detailed study of one of these cases showed that the potassium deficiency was due to excessive loss of potassium in the feces. The degree of loss of potassium was closely related to the fluid volume of the feces. The amount of potassium lost in cellular debris was of minor importance. Large amounts of potassium chloride given orally were required to relieve the symptoms of potassium deficiency.

Schweizerische Zeitschrift für Tuberkulose, Basel

8:369-434 (No. 5) 1951. **Partial Index**

Returning Recovered Pulmonary Tuberculosis Patients to Employment. H. Birkhäuser and A. Sarasin.—p. 369.
Selective Angiography of Pulmonary Vessels in Pulmonary Tuberculosis. W. Bolt and H. Rink.—p. 380.
Bronchospirometry. J. J. Hirdes.—p. 392.
Development of Tuberculous Stenoses of Large Bronchi. J. M. Lemoine and M. Chauvet.—p. 418.

Selective Angiography of Pulmonary Vessels.—Bolt and Rink report experiences with selective contrast visualization of the pulmonary circulation. Catheterization of the right side of the heart and of the pulmonary artery is performed under fluoroscopic observation. Cournand catheters are introduced through a venesection canula into the vena mediana cubiti or into the vena basilica and advanced until they reach the right side of the heart and the pulmonary artery. The contrast medium is injected through the catheter. Serial exposures are made during the injection in order to provide information about the finer changes in the arterial branches, the capillary system, and particularly the venous backflow by observation of retardation of the flow of the contrast medium. If the catheter enters and almost occludes a branch, the contrast medium should not be injected under pressure, because of the danger of rupturing the vessel.

Selective angiography must be preceded by a test for sensitivity to iodine. This report is based on 350 selective angiographies made at several German clinics in cases of silicosis, silicotuberculosis, tuberculosis, bronchiectasis, and pulmonary tumors, but their use in pulmonary tuberculosis is emphasized. Selective angiography of the pulmonary vessels provides information about blood perfusion of atelectatic areas and circulation in areas of infiltration and cavities. It supplements the results of spirometric tests. As a rule, the blood perfusion of the tuberculous pulmonary parenchyma is largely blocked. Gas analysis of arterial blood and registration of pulmonary circulation pressure corroborate changes in the vascular system of the pulmonary artery that are revealed by selective angiography.

Semaine des Hôpitaux de Paris

27:2729-2770 (Sept. 22) 1951

*Significance of Radiomanometry Performed in Course of Surgical Intervention for Lithiasis of Common Bile Duct. M. Roux.—p. 2729.
Maintenance of Fluid and Ion Equilibrium in Patients Operated on. J. Gosset.—p. 2737.
*Considerations on 15 Surgical Interventions Performed Under Radiomanometric Control for Syndromes of Portal Hypertension. C. Dubost, J. Auvert and F. Robert.—p. 2743.

Radiomanometry for Detection of Calculi in Common Bile Duct.—Examination of the common bile duct by direct vision, palpation, and intraductal exploration with a metallic catheter through an incision in the duct may not provide definite proof of the presence of calculi. An erroneous diagnosis may be made, because the common bile duct frequently is dilated in the absence of concretions, and may appear normal in the presence of lithiasis. Furthermore, free calculi tend to migrate toward the upper subhepatic portion, where even large concretions may not be discovered. Radiomanometry performed in the course of surgical intervention is the only reliable method of detecting calculi in the common duct. Serial roentgenograms are made at known pressure values by injecting the contrast medium into the bile passages with a manometric flask of Mariotte's bottle type. This method was employed by the author in four patients with calculous cholecystitis and suspected latent lithiasis of the common bile duct. The contrast medium was the sodium salt of diiodomethane sulfonic acid ("ténébryl"), a diiodoanalogue of methiodal sodium. The double-walled manometric bottle made it possible to maintain the contrast medium near the patient's body temperature. Manometric readings prevent injection of the contrast medium under too high a pressure. Radiomanometry delineates the calculous concretions and permits evaluation of pressure changes within the duct for differentiation of organic and functional obstructions. Complete visualization makes possible correct measurement of concretions and precise location of calculi to be removed. It also aids in deciding whether the common bile duct should be drained after the removal of calculi and the method of drainage to be employed.

Surgical Intervention Under Radiomanometric Control for Portal Hypertension.—Of 15 patients between 5 and 68 with portal hypertension, 10 had extrahepatic portal block associated with Banti's syndrome and 5 had intrahepatic block. Three of the 10, with extrahepatic block and unimpaired liver, were children between the ages of 7 and 9 with congenital stenosis of the portal vein; the remaining 7 had portal hypertension resulting from such conditions as vascular malformation and thrombosis. Of the five patients with intrahepatic block, two had hypertrophic cirrhosis of the liver, one had biliary cirrhosis, one had cirrhosis resulting from icterogenic hepatitis, and one had diffuse chronic phlebitis of the portal venous system with intrahepatic portal thrombosis and thrombosis of the splenic vein with congestive splenomegaly. Diagnosis was based on the association of splenomegaly with esophageal varices. Roentgenologic examination of the esophagus was preferred to endoscopy, and barium-containing carboxymethylcellulose gel was a highly satisfactory contrast medium. In all patients surgical intervention was indicated by repeated severe hemorrhages from the digestive tract. The authors agree with Blakemore, Whipple, and Linton that anastomosis between the portal and caval venous system is the method of choice for treatment of portal hypertension, but, since intervention on the splenic pedicle frequently fails, they prefer intervention on the portal vein itself. Manometric determination of the portal hypertension during the operations revealed values of 30 to 41 cm. of water as compared to a normal pressure of 10 cm. Manometric readings were completed by roentgenologic studies of the portal venous system with a 50% solution of the diethanolamine salt of 3,5 diiodo-4-pyridone-N-acetic acid (50% "dijodon") as contrast medium, which revealed the site of obstruction in the portal circulation and the condition of the portal trunk. Prior to dissection of the porta hepatis, roentgenograms provide information as to whether portacaval shunt can be established, as it was in 5 of the authors' cases. In 10 cases in which portacaval anastomosis was not feasible, splenectomy was performed in 4, ligation of the splenic artery in 2, and splenorenal anastomosis in 3. There were five postoperative deaths; only 1 of the 10 patients with extrahepatic portal block died, while 3 of the patients with cirrhosis died within several days of the operation and 1 died of massive hemorrhage within one month. The three patients with splenorenal anastomosis were improved after the operation, but hemorrhage recurred. It is still too early for definite evaluation of the operative result in three patients in whom direct portacaval anastomosis was performed.

Strahlentherapie, Munich

85:353-508 (No. 3) 1951. **Partial Index**

Damaging Effects of Irradiation on Genetic Material. H. J. Muller.—p. 362.
Modification of Irradiation-Induced Biologic Reaction by Chemical Substances. H. Langendorff.—p. 391.
Guiding Principles for Early Diagnosis, Treatment and Prevention of Malignant Neoplasms. H. Cramer and H. Gummel.—p. 401.
Statistics on the Problem of Sarcoma. M. Goes.—p. 409.
Cancer and the Question of Formation of Immune Bodies After Irradiation of Carcinoma. K. Steffens.—p. 435.
Indirect Irradiation in Multiple Sclerosis and Other Neurologic Diseases. D. Bente and W. Schneider.—p. 445.
Jacksonian Epilepsy Following Application of Large Doses of Roentgen Rays at Short Distance (Chaoul Tube) in Treatment of Temporal Melanoma. W. Hornberger.—p. 459.

Epilepsy Following Short-Distance Roentgen Irradiation for Temporal Melanoma.—Reviewing the literature on brain lesions resulting from roentgen irradiation, Hornberger shows that animal experiments have concerned early reactions in the form of mild inflammatory processes on the intracerebral vascular apparatus, which seems to be largely reversible, and late lesions in the form of necroses of brain tissue, which seem to be graver. Changes are not always limited to the irradiated region but may progress along the vessels and gradually involve neighboring and distant parts of the brain. The author gives particular attention to brain lesions observed in children in connection with roentgen ray epilation. Since the brain seems to be particularly vulnerable in young children, it has been suggested that epilation irradiation not be performed in children less than 3 years old. On the other hand, it has been pointed out that even after severe irradiation-induced scalp lesions, including carcinoma that appears after several decades, the brain tissue may not be damaged. A detailed report is given of a woman, aged 36, in whom Jacksonian epilepsy occurred nine months after 18,000 r had been applied with a Chaoul tube to a melanoma in the temporal region. Neurological studies, including encephalograms, indicated changes in the left hemisphere and ventricular dilatation on the left side. The fact that the attacks frequently began with spasmodic movements of the right arm and hand suggests a focus in the left anterior central convolution. The short-distance Chaoul irradiations, with their limited penetration, must have caused localized encephalopathy, which gave rise to the vascular reactions that were the basis of the epileptic attacks. At the neurological clinic at which this case was studied, four other cases have been observed in which late brain lesions resulted from roentgen irradiations. A case of apoplexy following roentgen irradiation of a carcinoma of the auricle is described, and it is suggested that such apoplexies might occur oftener after roentgen irradiation. The author discusses the safe maximum dose in Chaoul tube irradiations of the cranium.

BOOK REVIEWS

The 1951 Year Book of Medicine (May, 1950-May, 1951). Edited by Paul B. Beeson, M.D., and others. Cloth. $5. Pp. 696, with 149 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1951.

This is an excellent little handbook of abstracts of the most important medical reports given during 1950. Of particular interest is the section devoted to the chemotherapy of infection. Considerable discussion is devoted to the wisdom of the rather common practice of combining antibiotics in the treatment of disease. Judging from the evidence, combinations of antibiotics should not be used unless suitable in vitro tests have demonstrated synergistic or additive effect. The work of Garrod on the development of bacteria with nutritional dependence on an antibiotic and on actual stimulation of bacterial growth by sulfonamides and antibiotics is thoroughly reviewed. Garrod closes with the thought that although the supply of new antibiotics has so far exceeded the capacity of bacteria to develop resistance to them, presumably the useful number of antibiotics is limited, and in the future resistant bacterial species may possibly grow and produce disease despite the antibiotics.

In the section on the digestive system, the studies of Chapman, Rowland, and Jones on the motor activity of the duodenum and jejunum following tincture of belladonna and atropine administration are of interest. Their method of multiple balloon kymographic recording presents a means of studying the effects of antispasmodics in human subjects. This text is of value to the internist and general practitioner and to anyone desiring a quick review of the year's events in internal medicine.

Preparation, Properties, and Technology of Fluorine and Organic Fluoro Compounds. Editor: Charles Slesser, Ph.D., Director, Division of Technical Information and Declassification Service, New York Operations Office, New York. Associate editor: Stuart R. Schram, B.A., Consultant, Division of Technical Information and Declassification Service, New York Operations Office. National Nuclear Energy Series, Manhattan Project Technical Section, Division VII—Materials Procurement Project, Volume I. Cloth. $10.50. Pp. 868, with illustrations. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

The 40 papers by various authors that are published in this volume show the development in the United States during World War II of plant-scale methods for synthesizing fluorine, hydrogen fluoride, and a number of organic fluoro compounds. The last named are used as lubricants and as diffusion media in plants separating uranium isotopes. The physiological effects of fluorine are treated on pages 149-50, and safety precautions to be taken in handling it on pages 150-53. Analogous information for hydrogen fluoride and the organic fluoro compounds is lacking, perhaps because the properties of the first are well known and because the latter are chemically (and probably physiologically) inert. Chemists may be fascinated with this volume, but there is little in it of general interest to physicians.

Proceedings of the Third International Congress of the International Society of Hematology, Cambridge, England, August 21-25, 1950. Editorial committee: Carl V. Moore, editor-in-chief, et al. Cloth. $10. Pp. 593, with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

The 176 papers are presented in full, in abstract, or by title only. They are divided into five groups, some having further subdivisions. They comprise: 1. anemias and related subjects, 2. immunohematology, 3. leukemia and related diseases, 4. coagulation, purpura, and related subjects, and 5. miscellaneous papers. The papers are by outstanding men in contemporary hematology. The scope of the book covers both the most up-to-date advances and interesting backward glances in the field. By virtue of the highly technical nature of most articles, the book will appeal primarily to those working in one of the branches of hematology.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

How to Have a Baby: Techniques for Fertile Marriage. By Robert A. Klein and B. J. Schuman, M.D. Cloth. $2.50. Pp. 224, with 23 illustrations. Hermitage House, Inc., 8 W. 13th St., New York 11, 1951.

This is another book that is supposed to give information to the laity about infertility. The authors are a lawyer interested in family problems and a physician. Unfortunately, this book contains many unproved and controversial statements; for example, the illustrations on pages 23 and 25 show the fimbriated ends of the fallopian tubes completely surrounding the ovaries, although this has been proved to occur in humans only in a few rare instances. The authors explain Farris' ideas about ovulation, but several investigators have failed to corroborate Farris' findings; they state that one of the most reliable indications that ovulation is about to occur is reflected in the body temperatures, but several careful and competent investigators have proved that basal body temperature charts are only of limited value in infertility studies.

The reason for the inclusion of detailed descriptions of 12 different positions in sexual intercourse is not clear; moreover, there appears to be no need to devote a paragraph to the colostrum skin test of pregnancy, as this is absolutely unreliable. It is certainly untrue that "one of the most common reasons for failure to have a baby is an excessive secretion of lactic acid from the vagina." Also, it is not correct to emphasize that one explanation for the occurrence of early miscarriage is that the fertilized egg is unable to attach itself firmly to the lining of the womb and that lifting or moving heavy objects and strenuous exercise may loosen the egg. In the next paragraph the authors contradict this statement by saying that the majority of miscarriages take place during the first three months and that in about 80% of the cases the reason for miscarriage is some defect in the embryo. Incidently, 80% is too high a figure. A whole page is devoted to hyaluronidase, and the gratuitous information is added that this substance can be purchased in a pharmacy. Surely the poor results with hyaluronidase do not warrant explaining this substance in a book for the laity. This book is no place in which to discuss the questionable merits of pregnenolone for sterility. The authors are incorrect in stating that considerable success has been reported with pituitary hormones for the purpose of producing ovulation. This book, with its many inaccuracies, is not recommended for lay persons.

Lehrbuch der inneren Medizin. Band I. Herausgegeben von Professor Dr. Karl Fellinger, Vorstand der II. Medizinischen Universitätsklinik Wien. Unter Mitarbeit von Prof. Dr. R. Klima et al. Cloth. 38 marks. Pp. 822, with 149 illustrations. Urban & Schwarzenberg, Frankgasse 4, Wien IX, 1951.

As the authors are all students of Professor Jagic, a principle of unity is observed throughout this book. The first chapter, written by Fellinger, deals with constitution and general principles of diagnosis, prognosis, and therapy. An extensive chapter on diseases of the blood and the hematopoietic organs by Klima is comprehensive and well illustrated. A long chapter on diseases of the heart and circulation by Zimmermann-Meinzingen is well organized; however, not all opinions expressed may be fully accepted in this country, and the modern functional techniques find less consideration than one would expect. Roentgenograms are used sparingly, and electrocardiograms, mostly in the conventional leads, are widely represented. In the chapters by Nagel on diseases of liver, biliary tract, and pancreas, the findings of the recent years are not always given adequate consideration. The final chapter, on infectious diseases, by Fellinger, is complete and well illustrated. In general, the book is on the level of the medical student, for whom it will prove a valuable textbook. Literature references are omitted, and little attempt is made to introduce even the names of those responsible for recent advances. Nevertheless, the book has merits and may serve, as Fellinger states in the foreword, to illustrate how internal medicine is taught and has been taught in Vienna. The American student will find little factual information not presented in the standard English texts.

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Manual of Tumor Nomenclature and Coding. Prepared by Subcommittee of Statistics Committee, American Cancer Society. Cloth. $2.50. Pp. 119. Statistical Research Section, American Cancer Society, 47 Beaver St., New York 4, 1951.

In preparing this material, the committee frequently consulted the committee on tumor nomenclature of the National Research Council, U. S. National Committee on Health and Vital Statistics, and the American Medical Association through the Standard Nomenclature Committee on Oncology. The classification of tumors presented here is identical with the classification adopted in the fourth edition of Standard Nomenclature of Diseases, with the exception that the code numbers are altered to fit the over-all "Standard" coding system. The manual provides (*a*) a histogenic code, which consists of a logical arrangement of the tissues from which neoplasms are derived and an arrangement for numeric listing of tumors; (*b*) a malignancy code, a one-digit code designed to distinguish between benign and malignant neoplasms and a means of coding for the follow-up of suspicious lesions; (*c*) coding instructions; and (*d*) an alphabetic index of all the tumor diagnoses that appear in the numerical list.

Because of the considerable confusion and overlapping in tumor nomenclature, the manual suggests that users of the book list the diagnosis in the first term of each group of the numerical list. This is considered the preferred diagnostic term. In the conversion of this system for use in the coming fourth edition of Standard Nomenclature of Diseases, only the preferred terms have been listed as diagnoses in the body of the book, and eponyms and synonyms have been placed in the index.

The main purpose of this manual is to attempt to overcome barriers to communication that presently exist in tumor nomenclature owing to conflicting terminology and coding systems. In spite of the remaining complexities of tumor terminology, this manual provides a real contribution toward more accurate analysis and exchange of tumor information.

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Industrial Medicine on the Plutonium Project: Survey and Collected Papers. Edited by Robert S. Stone, M.D., Professor of Radiology and Chairman of Division of Radiology, University of California School of Medicine, San Francisco. National Nuclear Energy Series, Manhattan Project Technical Section, Division IV—Plutonium Project Record, Volume 20. Cloth. $6.25. Pp. 511, with illustrations. McGraw-Hill Book Company Inc., 330 W. 42d St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

This volume gives the biochemical facts concerning the metabolism of plutonium. This man-made element is an emitter of alpha particles and has a half-life of 24,300 years. It could, therefore, have effects on the body similar to those observed in the radium industry. The tolerance for plutonium (page 256) is one γ. Because this is such a small quantity, the methods of analysis are actually submicrochemical, and some are still secret. Nevertheless, the authors have given data from five human subjects that indicate that after the first two weeks following the ingestion of plutonium, it is excreted at a rate of approximately 0.01% per day, mostly in the urine. Nearly 90% of this sinister material entering the body is retained for many years. Its highest affinity is for the bone marrow. As a result of the scrupulous health measures described in this book, a remarkable record has been maintained in the work with plutonium up to this time. This book will be of interest to all those concerned with radiology and its attendant health problems.

Food and You. By Edmund Sigurd Nasset, A.B., M.S., Ph.D., Professor of Physiology, Department of Physiology and Vital Economics, School of Medicine and Dentistry, University of Rochester, Rochester, New York. Cloth. $3. Pp. 92. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

This booklet was written by a physiologist for the purpose of giving to his daughters (and others) information concerning food —its composition, its utilization, and human requirements. In the concluding paragraph the author writes, ". . . it may be said that good nutrition is not achieved by chance. The prime requirement is some accurate information on this subject." He has presented this material in an accurate, readable manner. The book should be useful to all laymen who would like to know more about food, especially to those who teach children.

Arzneitherapie der Herzkrankheiten. Von Hans-Jürgen Oettel, Dozent für innere Medizin, ärztlicher Direktor und Chefarzt der inneren Abteilung des Wenckebach-Krankenhauses, Berlin-Tempelhof. Cloth. 27 marks. Pp. 253, with 15 illustrations. Georg Thieme. Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

This treatise is perhaps best characterized by a quotation from the author's preface, "a need for interpretation." For more than 250 pages the reader is exposed to an accumulation of questionable pharmacologic data, speculations on hemodynamics, and unfounded conclusions. The text, written in journalistic style, is in many places beyond the easy grasp and understanding. The book deals principally with digitalis therapy, and an attempt is made to cover the pharmacology of a record number of preparations, many of which have been rejected long ago by serious investigators as worthless in cardiac therapy. The numerous and bulky tables are either hard to understand or taken from the literature, frequently without quotation of their origin. Although general therapeutic measures are included, no mention is made of the value of a salt-free diet in the treatment of congestive heart failure. Mercurial diuretics are dealt with sporadically throughout the text and in three lines at the end of the book. The outstanding feature of this confusing book is the unusual number of repetitions, in view of which the author apparently had to omit the conventional concluding alphabetic index.

Congenital Dislocation of the Hip. By Julius Hass, M.D. Cloth. $12.50. Pp. 405, with 134 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1951.

The first chapter of this book is entitled history, and, indeed, this book constitutes a history of the problem of congenital dislocation of the hip and of varying methods of treatment. Probably no one living today is better qualified to discuss this subject than Julius Hass. The average American became aware of the pathological entity known as congenital dislocation of the hip when Adolph Lorenz first came to America and made his triumphal tour across the United States; he was proclaimed by all newspapers as the "bloodless surgeon." Although there has been a continuous controversy over the merits of ideas and abilities of Adolph Lorenz, no one can deny that he was one of the first to offer a logical plan of treatment of congenital dislocation of the hip. As an assistant and later successor to Lorenz, Julius Hass is eminently qualified to write on this subject. Fortunately, his theories regarding the etiology, pathology, diagnosis, and prognosis of congenital dislocation of the hip and his experience in the treatment of this crippling congenital abnormality have been reshaped to some extent by his experience in the United States. This text offers a wonderful opportunity to any student of this subject to become familiar with both the theory and facts concerning it. It is recomemnded to all students of orthopedic surgery.

Psychoanalysis, Man, and Society. By Paul Schilder, M.D., Ph.D. Arranged by Lauretta Bender, M.A., M.D., Professor of Clinical Psychiatry, New York University, College of Medicine, New York. Cloth. $4. Pp. 382. W. W. Norton & Company, Inc., 101 Fifth Ave., New York 3, 1951.

The author considers from a psychoanalytic viewpoint the prevention and cure of the many problems of social and personal disorganization, including alcoholism, crime, economics, cultural patterns, and war. Although he obviously does not conceive of the psychiatrist's task as being political in nature, he nevertheless believes that the psychiatrist must take a determined stand on problems such as the rights of the individual versus the rights of the state and freedom versus obedience. By taking a firm stand in such matters, society will be able to erect a sense of values that will permit full development of the personality of the individual and avoid crippling the potentialities of both the person and the community. The volume is published posthumously and is arranged from a collection of papers of sociological significance that were published individually during the period from 1930 to 1940. Final arrangement and presentation of this book was made by the author's wife and professional associate.

Approved Laboratory Technic. By John A. Kolmer, M.D., D.P.H., Sc.D., Professor of Medicine and Director of Institute of Public Health and Preventive Medicine, Temple University, Philadelphia, Earle H. Spaulding, Ph.D., Professor of Bacteriology, Temple University School of Medicine, and Howard W. Robinson, Ph.D., Professor of Physiological Chemistry, Temple University School of Medicine. Fifth edition. Cloth. $12. Pp. 1180, with 431 illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1951.

This edition of this book is in keeping with the high standard set by the previous editions. The present authors acknowledge the assistance of 18 collaborators, 6 of whom are given special recognition for revision and rewriting of seven of the chapters, and 1 for the preparation of a new chapter on diagnostic virologic methods. The entire book has been revised to bring older material up-to-date and to include new methods in laboratory diagnosis. Older methods have not been deleted if they have not been replaced by others of increased accuracy and diagnostic value. This is illustrated by the retention of the Takata-Ara test in preference to inclusion of the newer colloidal gold or colloidal red tests, employed as methods for detecting disturbances in the formation of plasma globulins by the liver.

The original plan of the book is retained, with emphasis on principles, techniques, and normal results. As in previous editions, methods for the care, inoculation, examination, and autopsy of animals are included, along with the techniques for the more routine clinical procedures, methods for microscopic examination of human tissues, and the preservation of gross tissue specimens. The technique for human autopsy is properly omitted as outside the scope of a manual for medical technicians. Abnormal findings and their clinical significance are the subject of a separate book published by the senior author entitled "Clinical Diagnosis by Laboratory Examinations."

The book adequately covers all the essential methods in use for clinical laboratory diagnosis. The chapter subdivisions are logically selected and well arranged for use as a textbook for the medical student and technician. The book will also serve as a reference work for physicians and clinical pathologists. The contents are carefully prepared and edited with a minimum of typographic errors and omissions. An appendix of conversion factors, four-place logarithms, and other technical data, and a well-constructed index increase the usefulness of the book for study and handy reference. The authors have wisely adopted use of the new nomenclature of cells and diseases of blood and blood-forming organs. This book is highly recommended to all workers engaged in the performance of clinical laboratory procedures.

Surgical Care: A Practical Physiologic Guide. By Robert Elman, M.D., F.A.C.S., Professor of Clinical Surgery, Washington University School of Medicine, St. Louis. Cloth. $8. Pp. 586, with illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1951.

This excellent, practical, and comprehensive manual on preoperative and postoperative care of patients will be informative and interesting to surgeons. It can also be used as a textbook for junior and senior students, and it should be popular and helpful as a reference for interns and residents. The book is unique in that its 19 chapters cover everything from basic preoperative care and anesthesia to nutritional therapy, chemotherapy, and postoperative complications; a chapter on thermal burns is also included. The subject matter is well outlined and clearly presented. Contemporary opinion on surgical problems is accurately stated and is authenticated by well-chosen references. The author has introduced a new book covering an important field in which many new advances have been made. The book should aid surgeons and, in addition, provide instructive and valuable reading for all physicians.

Die neuzeitlichen Brustwand- und ExtremitätenAbleitungen in der Praxis. Von Prof. Dr. Herbert Reindell, Oberarzt der medizinischen Universitätsklinik Freiburg i.Br., und Dr. Helmuth Klepzig, Assistent der medizinischen Universitätsklinik Freiburg i.Br. Mit einem Vorwort von Prof. Dr. Ludwig Heilmeyer, Direktor der medizinischen Universitätsklinik Freiburg i.Br. Cloth. 22.50 marks. Pp. 179, with 64 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

The authors have fulfilled their purpose, as stated in the introduction, to familiarize the reader with the use of multiple precordial leads and aV limb leads and to close the present gap in the German literature concerning this subject. On the basis of an excellent survey of the extensive literature up to 1949, fortified by their own experience and by anatomic correlation, the subject is clearly and logically developed. The text is concisely written and well illustrated; it includes a discussion of the normal precordial electrocardiogram and its variations, the diagnosis and localization of myocardial infarction, and the strain patterns and other less specific abnormalities of the chest leads and aV limb leads. Some concepts, such as the sharp distinction of ventricular strain with simple delay of activation (*Verspaetungskurve*) from strain with alteration of repolarization (*mit Functionsstoerung*), may not find general acceptance. Strain and bundle branch block patterns in different "electrical" positions merit more stress and illustration. Some inconsistencies between the text and legends of the illustrations (e. g., Fig. 3) or incorrectness in the quotation of literature (statements on acute cor pulmonale and on incomplete left bundle branch block) can be corrected in the next edition. Although the presentation does not offer any new theoretical or practical aspects of electrocardiography, this book can be recommended to any student new in the field who wants to learn more about the pertinent literature scattered throughout various journals over many years.

Annual Review of Biochemistry. Volume 20. J. Murray Luck, editor; Hubert S. Loring and Gordon Mackinney, associate editors. Cloth. $6. Pp. 648, with illustrations. Annual Reviews, Inc., Stanford, California, 1951.

In this volume, various fields of biochemistry are discussed by leading authorities in the United States and Europe. In keeping with the policies of the Annual Review, each section consists not of an annotated summary of articles published during the past year in a particular field but of a detailed appraisal, often devoted largely to the particular aspect of that field that has claimed the author's interest. Certain sections, such as those devoted to nutrition, to the biochemistry of cancer and antibiotics, to the metabolism of drugs and toxic substances, and to biochemical genetics, should prove of particular value to the physician. Others, such as those dealing with the chemistry and metabolism of lipids, steroids, amino acids, and proteins, nucleic acids, purines, pyramidines, and natural pigments, and with x-ray crystallographic studies are of interest in as much as they indicate the present status of knowledge and the newer techniques in these specialized fields of research.

A Bibliography of Infantile Paralysis 1789-1949, with Selected Abstracts and Annotations. Edited by Morris Fishbein, M.D., and Ella M. Salmonsen, Chief, Medical Department, John Crerar Library, Chicago, with Ludvig Hektoen, M.D. Prepared under direction of National Foundation for Infantile Paralysis, Inc. Second edition. Cloth. $16. Pp. 899. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1951.

This volume brings the bibliography of the world's periodical literature on poliomyelitis up-to-date as of 1950. Articles on both clinical and investigative work are included, and many papers are abstracted. Material from textbooks, encyclopedias, and public health and health education bulletins is not listed, except where such publications represent innovations. The bibliography is arranged chronologically; access to either a particular aspect of the problem or to a given author is facilitated by extensive subject and author indexes. This volume will prove valuable to anyone working in the field of poliomyelitis.

Recent Progress in Hormone Research: The Proceedings of the Laurentian Hormone Conference. Volume VI. Edited by Gregory Pincus. Cloth. $8.50. Pp. 431, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1951.

This annual review of the Laurentian Hormone Conference is always replete with the controversial and the new. Witschi's masterful presentation of the theory of transmigration of the primordial germ cells from the yolk sac to the celomic epithelium is worthy of close reading by every student of embryology, gynecology, and endocrinology. Zuckerman's paper on the occurrence of oogenesis in the adult ovary negates the thesis that oocytes are produced and destroyed throughout reproductive life in synchronization with the estrus cycle and is a fit companion for the Witschi monograph. Other subjects considered are the use of isotopes in hormone problems, chemistry, physiology, and clinical applications of corticotropin, and the adrenal cortex steroids.

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QUERIES AND MINOR NOTES

PRURITUS ANI

TO THE EDITOR:—*What is the procedure for the diagnosis and treatment of pruritus ani?* *M.D., Canada.*

ANSWER.—The successful treatment of pruritus ani depends on an understanding of the causative factors. This, of course, is predicated on a careful perianal, anal, proctoscopic, and vaginal examination. Only after these procedures have been carried out should definitive treatment be prescribed. True, there are patients who suffer severe itching when careful examination will throw no light on the cause. Even these patients can be given relief and some hope of cure.

1. Eradicate all anal and vaginal pathology that might be causative. However, simple hemorrhoids seldom cause itching, and many patients have undergone hemorrhoidectomy with disappointing results.

2. Mycotic infections, principally dermatophytosis, are common offenders, and specific treatment should be applied accordingly. Look for lesions on the feet. They are often spread to the perianal region with the bath towel.

3. Allergy is occasionally a factor. Sensitivity to drugs, food, clothing (nylon).

4. Much has been made of psychosomatic factors. It is true that nervous tension will set off and aggravate pruritus ani, but seldom if ever is a patient relieved or cured with psychotherapy alone.

5. Menopausal involutional changes may occasionally cause pruritus.

6. Trichomonas vaginalis with vulvar itching may extend to the perianal region.

Patients should be advised as follows:

1. Wash anal area carefully with a detergent or very bland soap following usual post-defecatory cleansing.

2. If dermatitis is moist or "weeping" type, cold wet applications of aluminum subacetate (Burow's solution), 6 gm. to 200 cc. of water or milk repeated three or four times daily for 10 to 15 minutes.

3. If fungus infection is present, apply freshly prepared Castellani's paint daily with applicator, or the usual fungicidal medicaments.

4. If dermatitis is dry, treatment with icthyol 0.5, zinc oxide ointment 5.0, calamine 5.0, and aquaphor q.s. 30.

5. X-ray therapy may be used only after all other therapy has been tried and found wanting. X-ray therapy should be given only by a roentgenologist or dermatologist and with great care. If no results are forthcoming after four or five treatments, it should be stopped.

6. Clover-leaf type of operation and other types of nerve-cutting procedures in the hands of some men have brought a modicum of comfort and in some cases cures.

7. Beware of subtegumentary injections of all drugs, including oily anesthetics and alcohol.

8. Do not apply ointments to "weeping," moist perianal skin.

This is by no means the complete story; only a brief résumé. Refer to recent standard books on proctology for other etiological factors and details on treatment.

HAY FEVER

TO THE EDITOR:—*In the treatment of ragweed "hay fever," how do the antihistamines taken orally compare to desensitization in preventing complicating asthma?*

Erwin Rice Kaback, M.D., Otisville, N. Y.

ANSWER.—The antihistamines have virtually no effect in preventing the asthma complicating hay fever. Desensitization for pollinosis is effective in the majority of cases. As a matter of fact, the asthma is much more effectively prevented by desensitization than is hay fever.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

FOOD POISONING

TO THE EDITOR:—*In about 50% of a group of 175 school children participating in a school lunch program, symptoms of acute food intoxication developed after ingestion of egg salad sandwiches. The dressing, prepared the night before contained vinegar and was prepared in an enamel container from which some of the enamel was chipped. There was no refrigeration. Vomiting appeared within three to five hours after ingestion. Diarrhea was severe, but the stools contained no gross blood, and there was very little pain. The attacks lasted about three hours. In some cases there was prostration. All children recovered by the following morning with no known sequelae. No cultures were taken of the stools and none received a complete study. The possibilities of contamination of the dressing with staphylococci or with antimony from the chipped container have been considered. Can you give any information on the latter possibility?*

Charles W. Rogers, M.D., Winona, Minn.

ANSWER.—With infrequent exception, when episodes of this character are well investigated, they are found to be caused by bacteria, or bacterial toxins, most frequently the toxins of staphylococci. It is true that some vitreous enamels may contain antimony, at least in traces and that antimony may be toxic after ingestion. However, with due consideration for the quantity of chipping that may have occurred, the relative insolubility of antimony, and its dispersion through the comestible, it becomes impractical to attribute the intoxication to this chemical. This type of food poisoning sometimes results from consumption of food stored in containers plated with cadmium. The outstanding example is the drinking of acid lemonade that has been chilled in refrigerator trays replated with cadmium. The symptoms coincide well with those mentioned in the query. This possibility invites exploration. But in the absence of an appropriate laboratory investigation in the episode mentioned, antimony as the source should be doubted and bacteria considered as highly probable.

AMEBIASIS

TO THE EDITOR:—*1. In the presence of clinical amebiasis, is the organism always found in the stool? 2. How reliable is the complement fixation test or the agglutination test for amebiasis? 3. Given a case with positive stool and a positive agglutination test, how soon after therapy will the agglutination test be negative? How valuable is the agglutination test to determine the so-called carrier? 4. Given a case of clinical "colitis," with repeatedly negative stools, what is considered a fair trial of therapeusis, to rule out amebiasis?* *M.D., Georgia.*

ANSWER.—1. The diagnosis of amebiasis is probably never justified without the finding of Endameba histolytica in the stools or other bodily secretions or excretions. Many forms of intestinal disorders have been mistaken for amebiasis. On some occasions the symptoms of other forms of colitis have been very similar to those associated with amebiasis, and at times the improvement following the administration of the anti-amebic drugs has been such that the diagnosis of amebiasis might be justified.

2. The complement fixation test for amebiasis has not reached the stage where it could be substituted for the stool examination. It is fairly reliable when done by personnel of the large United States Public Health laboratories but has not found a place in the laboratories of clinics or other laboratories of private practice.

3. The time for the agglutination test to become negative after adequate treatment is quite variable. The agglutination test is rarely helpful in determining the so-called carrier of amebiasis, except in the hands of the personnel of the United States Public Health laboratories.

4. In a case of lesions of the rectum or colon resembling those of amebiasis without the finding of the ameba, the administration of a course of carbarsone and emetine hydrochloride may be justified on rare occasions. Administration, concurrently, of

0.25 gm. of carbarsone three times a day for four days and 1 grain (60 mg.) of emetine twice a day for three days should be considered sufficient for therapeutic trial.

AMENORRHEA FOLLOWING ACCIDENT

TO THE EDITOR:—*A girl, aged 14, was struck on the left leg by an automobile in May, 1950. While the trauma was trivial, she has not menstruated since that time. Menses began at age 12 and were regular and normal. In August, 1950, she began to notice a gain in weight and height; by March, 1951, she had gained 5 in. (12.70 cm.) in height and 50 lb. (22.7 kg.) in weight. In April, 1951, she weighed 196 lb. (88.9 kg.) after going on a self-imposed diet. Her weight at the time of the accident was 176 lb. (79.8 kg.). Her present height is 69½ in. (175.26 cm.). Physical examination revealed no abnormalities. Fat distribution is normal. Basal metabolic rate is +14%. Except for obesity and gain in weight, the only symptom is nervousness. Is there any relation between the accident and the amenorrhea and the gain in weight and height?*

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ANSWER.—The evidence presented in this case is reminiscent of the old classification of hypogonadal obesity, in which failure of the ovaries was considered to be the responsible factor for the gain in weight. There is little or no evidence of a scientific nature, however, that absence of ovarian function, per se, can cause an accumulation of fat. This girl probably has a constitutional or personality predisposition to obesity, since she was considerably overweight at the time of the accident. Often, a slight trauma or illness can precipitate the accumulation of weight by upsetting the emotional equilibrium. The amenorrhea may also be on a psychosomatic basis following the trauma. It is difficult to determine the cause of the rapid increase in height from the data presented. Treatment should, of course, primarily be directed toward reduction of weight. There is a good possibility that the menstrual periods may return spontaneously with adequate weight reduction. If this does not occur, however, there is a possibility of some endocrine disturbance with a resulting ovarian failure. This condition will require exploration from the endocrine standpoint, such as hormonal bioassay, vaginal smears, and other suitable tests. In the process of weight reduction, it is suggested that the patient be supported with appetite-curbing medication, such as the amphetamines, since in this case it will apparently be rather difficult to obtain a satisfactory weight reduction with simple diet management.

CEREBRAL VASOSPASTIC EPISODES

TO THE EDITOR:—*A 50-year-old manager of a department store began having intermittent spells in which his right arm and leg would become numb and partly paralyzed; he also had partial aphasia. Two weeks before the attack, he passed an insurance examination with all negative findings, including normal electrocardiogram and laboratory tests; the blood pressure was 138/84. He had been under emotional tension, frequently working overtime, smoking 30 cigarets daily, and taking two d-amphetamine sulfate (dexedrine®) tablets to curb his appetite. What is the etiology of the cerebral angiospasm, as well as the prognosis in this patient, who has no neurologic sequelae? It is now five weeks since his attack; he is able to take short walks but fatigues easily. He is receiving multivitamins and papaverine hydrochloride and has been told to increase his physical activities.* *M.D., New York.*

ANSWER.—The picture is that of a cerebrovascular episode involving the left half of the brain, probably cortical in view of the fact that aphasia developed. It is not at all surprising that results of his previous examination were normal. None of these could in any way portend the development of these vasospastic episodes. The intake of an amphetamine preparation and possibly the smoking could have played a precipitating role in the development of the angiospasm. Probably tension was the most serious factor. Early episodes have left no residue, but repetition of these attacks will ultimately produce an area of softening which may be the site of the subsequent vascular accident or which may be the precursor of an irreversible hemiplegia or aphasia. It is common in the postmortem examination of the brains of such persons to find multiple areas of softening for which there was no clinical evidence. These sites are the signature of the attack mentioned in your description.

Avoidance of business worries and family tensions is imperative. Sedative drugs, like phenobarbital, and antispasmodic drugs, like papaverine, are useful. There would seem to be no use for vitamins here. Normal physical activities, avoiding excesses, are not interdicted.

MENSTRUATION AT THE MENOPAUSAL AGE

TO THE EDITOR:—*On page 360 of* THE JOURNAL *of Sept. 22, 1951, the answer to the query about menstruation at the menopausal age seems inadequate. The intimation that most women with frequent or heavy menstrual periods require no investigation is misleading. It is not normal for uterine bleeding to increase in amount in the premenopausal period. Women with bleeding sufficiently profuse or otherwise deranged to make them seek medical advice certainly merit curettage for diagnostic purposes; fortunately the curettage often may have therapeutic value as well. This is particularly true when the diagnosis is endometrial hyperplasia, endometrial polyp, or irregular (delayed) shedding of the endometrium. While an occasional submucous myoma may be removed with a curet, most of these will require removal of the uterus for adequate control of bleeding. The important thing to remember is that there are few, if any, unexplainable derangements of bleeding from the endometrium and that a clear-cut diagnosis can be made if one will take the trouble to proceed along well-charted paths. Obtaining and recording an accurate history is the first prerequisite, and correlating historical data with histopathological evidence is most important. When the diagnosis has been made, treatment usually becomes obvious. However, it seldom takes the form of removing the uterus through the vagina—as has been suggested in the answer previously published—unless this is to be done as part of a procedure to repair the remote results of childbirth trauma. Vaginal hysterectomy in the absence of descensus or prolapse is not an operation to be undertaken lightly by the occasional operator.*

Charles E. McLennan, M.D.
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BOWEL DISTURBANCE AND DIABETES

TO THE EDITOR:—*In the answer to the query on "Bowel Disturbance and Diabetes" (*J. A. M. A. **147**:796 *[Oct. 20] 1951), there was one possibility that was not considered, namely, the coincident failure of the acinar portion of the pancreas. Shields Warren in "Pathology of Diabetes Mellitus" (Philadelphia, Lea & Febiger, 1930) reports varying degrees of fibrosis of the acinar portion in about half of 300 cases coming to autopsy. The functional failure is obviously not as common but may occur.*

In May, 1951, Dr. John Henkin and I studied a case similar to the one described in THE JOURNAL. *The patient, age 62, had had diabetes for 23 years, controlled by 56 units of insulin per day. The diarrhea began gradually about November, 1949. There was a continuous and progressive loss of weight, up to 20 lb. (9 kg.). Stools averaged four to six each morning. Despite an increase in food and decrease in insulin, there were increasing numbers of insulin reactions. X-ray studies of the gastrointestinal tract were normal. A flat x-ray of the abdomen showed calcified areas in the region of the pancreas. The stools contained undigested fats but no parasites or blood and no pancreatic enzymes. Blood studies revealed only a low serum amylase level (29 mg.).*

Treatment was begun about May 10 with pancreatin, three panteric® tablets after each meal and two at bed time. The patient has gained 10 lb. (4.5 kg.). Diarrhea ceased within a few days but recurs with any irregularity in taking pancreatin.

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